
14th European Meeting of the Paleopathology Association

Coimbra, Portugal, 28-31 August 2002

Auditório da Reitoria
Departamento de Antropologia da Faculdade de Ciências e Tecnologia
Universidade de Coimbra



.....
14TH EUROPEAN MEETING OF THE PALEOPATHOLOGY ASSOCIATION

PROGRAM - ABSTRACTS

14TH EMPPA 2002

COIMBRA, 28 – 31 AUGUST, 2002

<http://emppa2002.uc.pt>

14empa02@ci.uc.pt

EDITOR

DEPARTAMENTO DE ANTROPOLOGIA
FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE DE COIMBRA
PORTUGAL

ISBN

972 - 9006 - 42 - 3

Copyright © 2002, Departamento de Antropologia
da Universidade de Coimbra

.....
14TH EUROPEAN MEETING OF THE PALEOPATHOLOGY ASSOCIATION

HONORARY COMMITTEE

Minister of Science and High Education, Prof. Dr. Pedro Lynce
Rector of the University of Coimbra, Prof. Dr. Fernando Rebelo
President of the Direction Board of the Faculty of Sciences and Technology of the
University of Coimbra, Prof. Dr. Lélío Quaresma
Mayor of Coimbra, Dr. Carlos Encarnação
President of the Paleopathology Association, Prof. Dr. Michael Schultz
Emerita President of the Paleopathology Association, Ms. Eve Cockburn
Professor Decano in Anthropology, Prof. Dr. Manuel Laranjeira Rodrigues de Areia
President of the Department of Anthropology of the Faculty of Sciences and
Technology of the University of Coimbra, Prof. Dr. Cristina Padez
Coordinator of the Anthropological Museum, University of Coimbra, Prof. Dr. Paulo
Gama

SCIENTIFIC COMMITTEE

Don Brothwell (UK)	Alejandro Pérez-Pérez (Spain)
Domingo Campillo (Spain)	Mary Lucas Powell (USA)
Luigi Capasso (Italy)	Charlotte Roberts (United Kingdom)
Éric Crubézy (France)	Conrado Rodriguez-Martín (Spain)
Eugénia Cunha (Portugal)	Michael Schultz (Germany)
Olivier Dutour (France)	Sheila Mendonça de Souza (Brazil)
Francisco Etxeberria (Spain)	Eugen Strouhal (Czech Republic)
Gino Fornaciari (Italy)	Maria Teschler-Nicola (Austria)
Rimantas Jankauskas (Lithuania)	Duarte Nuno Vieira (Portugal)
George Maat (The Netherlands)	Roxie Walker (United Kingdom)
Antónia Marcsik (Hungary)	David Weaver (USA)
Don Ortner (USA)	

ORGANIZING COMMITTEE

Eugénia Cunha
M. Teresa Ferreira
Carina Marques
Vítor Matos
Maria Augusta Rocha
Ana Luísa Santos
Cláudia Umbelino
Sofia Wasterlain

VOLUNTEERS COMMITTEE

Maria da Graça Araújo
Sónia Codinha
Cristina Cruz
Francisco Curate
Ana Rita Domingos
Liliana Laranjeira
Marta Macedo
Paula Menezes
David Ribeiro
Carne Rissech
Zélia Rodrigues
Cláudia Santos
Ana Leonor Silva
Ana Maria Silva
José Carlos Xabregas

.....
14TH EUROPEAN MEETING OF THE PALEOPATHOLOGY ASSOCIATION

SPONSORED BY:



IAV- INSTITUTO DE AMBIENTE E VIDA



CENTRO DE INVESTIGAÇÃO EM ANTROPOLOGIA



**DEPARTAMENTO DE ANTROPOLOGIA DA
UNIVERSIDADE DE COIMBRA**

**MUSEU ANTROPOLÓGICO DA UNIVERSIDADE DE
COIMBRA**

**FACULDADE DE CIÊNCIAS E TECNOLOGIA DA
UNIVERSIDADE DE COIMBRA**



PRÓ- REITORIA DA UNIVERSIDADE DE COIMBRA



FCT- Fundação para a Ciência e a Tecnologia-
Apoio do programa Operacional Ciência,
Tecnologia, Inovação do Quadro Comunitário de
Apoio III



**SERVIÇO DE ACÇÃO SOCIAL DA UNIVERSIDADE
DE COIMBRA**



FUNDAÇÃO CALOUSTE GULBENKIAN

WITH THE SUPPORT OF:



BETA ANALYTIC, INC.



JUNTA DE TURISMO LUSO-BUÇACO

LICOR BEIRÃO



COOPERATIVA DE VITICULTORES E OLIVICULTORES DE FREIXO DE NUMÃO CRL



REGIÃO DE TURISMO DO CENTRO



COMISSÃO DE COORDENAÇÃO DA REGIÃO CENTRO



DIRECÇÃO REGIONAL DE AGRICULTURA DA BEIRA LITORAL



.....
CONTENTS

HONORARY AND SCIENTIFIC COMMITTEES	.....	<i>i</i>
ORGANIZING AND VOLUNTEERS COMMITTEES	.....	<i>ii</i>
SPONSORS / SUPPORTERS	.....	<i>iii</i>
PROGRAM	.....	1
ABSTRACTS	.....	11
LIST OF PARTICIPANTS	.....	173
INDEX	.....	185
Author		
Subject		

PROGRAM

Oral presentation – 15 minutes (10 minutes for presentation plus 5 minutes for discussion)

Poster presentation – the authors should be near their works in the scheduled sessions for discussion

.....

27 AUGUST

04.00 – 06.00 p.m. Opening of registration desk and poster mounting (Auditório da Reitoria)

05.00 p.m. Refreshment in the rose garden of the Instituto/Departamento de Antropologia

.....

28 AUGUST

08.30 a.m. Registration. Poster mounting

09.30 a.m. **Opening Session - Congress Welcome**

10.15 a.m. Coffee break

10.40 a.m. **Session 1** *INFECTIOUS DISEASES THROUGH TIME AND SPACE*

Chairpersons Olivier Dutour and Sheila M. Souza

Lecture *Archaeology and history of human pathogens: what do the bones tell?*

(Olivier Dutour, France)

Oral presentation

Tillier, A-M.; Arensburg, B. & Duday, H. *The Qafzeh 11 adolescent: a case of otitis media in the Levantine Middle Paleolithic.*

Souza, S. *Rib periosteal reactions in skeletons from Atacama, Chile: Tuberculosis.*

Zink, A.; Sola, C.; Reischl, U.; Grabner, W.; Rastogi, H.; Wolf, H. & Nerlich, A. G.

Molecular identification and characterization of M. tuberculosis complex in ancient Egyptian Mummies.

Panhuisen, R. & Hoogland, M. *Treponemal disease in a pre-Columbian population from Anse a la Gourde, Guadeloupe.*

Mariotti, V.; Dutour, O.; Belcastro, M. G.; Facchini, F. & Brasili, P. *Bilateral acroosteolysis of the feet in a Celtic skeleton of IV-III century B.C. (Casalecchio di Reno, Bologna, Italy). Probable case of leprosy.*

Belcastro, M. G.; Mariotti, V.; Facchini, F. & Dutour, O. *A probable case of leprosy in the Early Middle Ages necropolis of Vicenne-Campochiaro (Molise, Italy).*

01.00 p.m. Lunch

02.15 p.m. **Session 2** *POPULATIONS STUDIES FROM BRONZE AGE TO MODERN ERA*

Chairpersons Anne-Marie Tiller and George Maat

Oral presentations

Schultz, M. & Schmidt-Schultz, T. H. *Diseases during Infancy and Childhood in the Bronze Age.*

- Nerlich, A.; Rohrbach, H.; Bachmeier, B.; Hagedorn, H. & Zink, A. *Paleopathological analysis of diseases during different time periods in the necropolis of Thebes-West, Upper Egypt.*
- Bourbou, C. *Health Patterns of Proto-Byzantine Populations (6th-7th centuries AD) in South Greece: The Cases of Eleutherna (Crete) and Messene (Peloponnese).*
- Teegen, W-R. & Schultz, M. *Paleopathological investigation of an early medieval population from Höxter (Westphalia, Germany).*
- Mitchell, P. *The Palaeopathology of Skulls from a Medieval Cave Cemetery near Safed, Israel.*
- Arcini, C. *Does pathological findings reflect excavation techniques, preservation or health status?*
- Matias, A. *Health and welfare in ancient XIIIth-XVIIIth Santarém. Paleopathological case studies from Santa Maria de Alcáçova's Church.*
- Paja, L. & Marcsik, A. *Palaeopathological examination in a medieval osteological series (Óföldaák, Hungary).*
- Brobeil, S. A. & Al Oumaoui, I. *Health and disease in the city of Granada (Spain) during the XVIIth century.*
- Herrerín, J. & Garralda, M. D. *Mendicant and ill. Individual n. 14 from the El Burgo de Osma cathedral Cloister's necropolis.*

05.00 p.m. Coffee break

Poster presentation

- I. INFECTIOUS DISEASES THROUGH TIME AND SPACE**
- Zink, A.; Grabner, W. & Nerlich, A. *Molecular study on human tuberculosis in contemporary tissue samples and time delineated populations from ancient Egypt. 1*
- Hagedorn, H.; Zink, A. & Nerlich, A. *Endoscopic examinations of the paranasal sinuses and the middle ear in ancient Egyptian mummies. 3*
- Polo-Cerdá, M. & García-Prósper, E. *Osteoarchaeological evidences of tuberculosis in the first population of Vallentia, Spain. 6*
- Canci, A.; Nencioni, L.; Minozzi, S.; Catalano, P. & Fornaciari, G. *Spinal tuberculosis (Pott's disease) in a skeleton from Rome suburbia (I century AD). 9*
- Macedo, M. C. *A Severe Case of Pyogenic Infection of the Lumbar Spine. 12*
- Maczel, M.; Marcsik, A.; Dutour, O.; Nerlich, A. & Zink, A. *Atypical tuberculous alterations in an ancient skeleton confirmed by paleomicrobiological results. 14*
- Ferreira, M. T. & Silva, A.M. *A case of osteomyelitis in the hip of a medieval portuguese male skeleton. 17*
- Santos, S. A.; Costa, C. & Almeida, P. *Study of a probable case of poliomyelitis (Flor da Rosa). 20*
- Fernandes, T.; Granja, R. & Thillaud, P. *Analysis of two calcified pleural plaques from a medieval Portuguese Population. 24*
- Santos, A. L.; Gardner, M. & Allsworth-Jones, P. *A Possible Case of Treponematosi in a Taino/Arawak Skull from Jamaica. 27*

- George, A. *A possible case of leprosy in Prehistoric New Zealand Maori*. **30**
 Molnár, E.; Maczel, M.; Marcsik, A.; Pálfi, G.; Nerlich, A.; Zink, A. & Dutour, O.
Paleoepidemiological data of skeletal tuberculosis from Hungary. **33**
 Codinha, S. *Two cases of syphilis from the Necropolis of Carmo's Convent*. **36**
 Kanaan, A.; Sáez, A. & Sánchez, J. *Tuberculosis in historical human cadaveric bones
 (remains)*. **39**
 Ferrari, L. & Micalizio, S. *About some cases of tuberculosis of the Pathology Museum
 in Turin*. **42**

II. POPULATIONS STUDIES FROM BRONZE AGE TO MODERN ERA

- Jordana, X.; Isidro, A.; Garcia, C. & Malgosa, A. *The Necropolis of Sant Pere
 (Terrassa - Spain): Paleopathological analysis*. **46**
 Molnár, E. & Marcsik, A. *Paleopathological evaluation of a 7-8th century Hungarian
 skeletal population based on state of conservation*. **50**
 Maczel, M.; Marcsik, A. & Dutour, O. *Pathological alterations in the 8th century
 skeletal series of Csongrád-Felgyó, Ürmös Tanya (Hungary)*. **53**
 Masnicová, S. & Benus, R. *Developmental defects in skeletal remains from the Great
 Moravian and Early Middle Ages cemeteries at Devín (Slovakia)*. **56**
 Rijpma, F. & Maat, G. *A medieval independent society of Women. About 120
 skeletons from the "Begijnenhof" Cemetery Breda, The Netherlands*. **59**
 Miquel-Feucht, M. & Villalaín-Blanco, J. *Disease and death in the old population of
 Segorbe (Spain) (XV-XVIII centuries)*. **62**
 Santos, A. L.; Allsworth-Jones, P. & Rodrigues, E. *Human remains in the Lee
 Collection (Jamaica): pathological evidence*. **65**

III. ZOOPATHOLOGY

- Fragoso, A. B.; Souza, S. & Oliveira, L. *The use of paleopathology techniques on the
 study of skeletal changes in marine Tucuxi Dolphin Sotalia fluviatilis
 (Cetacea, Delphinidae) of Rio de Janeiro coast, Brazil*. **68**

07.00 p.m. Reception at the City Hall

.....

29 AUGUST08.30 a.m. **Session 3** *VARIOUS PATHOLOGICAL CONDITIONS***Chairpersons** Jane Buikstra and Eugen Strouhal**Oral presentation**

Buikstra, J. & Komar, D. *Selective Middle Archaic Funerary Rituals from West-Central Illinois (US), New Data on Pathology and Demography.*

Strouhal, E. *Palaeopathology of Iufaa and persons found besides his shaft - tomb at Abusir (Egypt).*

Cook, D. C. & Powell, M. L. *Paget's disease at Torre de Palma?*

Dias, G.; Dennison, K. J. & Premachandra, I. M. *The Previously Unrecognized Posterior Deep Temporal Nerve Groove on the Cranial Base.*

Buckley, H. R. *Cribra orbitalia in a Pacific Island context: Variation in the expression of iron-deficiency anaemia between two Pacific Island skeletal samples.*

Brothwell, D. *Skeletal atrophy and the problem of the differential diagnosis of conditions causing paralysis.*

10.00 a.m. Coffee break

10.15 a.m. **Session 4** *AUXILIARY TECHNIQUES TO HUMAN SKELETAL ANALYSIS***Chairpersons** Alan Cooper and Andreas Nerlich**Lecture** *Extracting authentic ancient DNA sequences from skeletal remains* (Alan Cooper and Tom Gilbert, UK)**Oral presentation**

Papathanasiou, A. *Relation of health and diet of Neolithic Greece.*

Castro, M.; Ferrada, C.; Valle, L.; Benavente A. & Aspillaga, E. *Chronic arsenic poisoning and hematologic disorders in prehistoric Native Americans from Northern Chile.*

Berrocal, M. I.; Garcia, E.; Baxarias, J.; Campillo, D. & Subirá, M. E. *Paleopathological analysis of Harris's Lines in the Late Roman Necropolis of Prat de la Riba in Tarragona (Spain).*

Garcia, E.; Berrocal, M. I.; Baxarias, J.; Campillo, D. & Subirá, M. E. *Paleopathology and Trace Elements in the Francolí Necropolis (Tarragona, Spain, III - V century a.C).*

Smrčková, V. & Svenssonová, M. *Diseases of the populations from the Migration period.*

Schmidt-Schultz, T. H. & Schultz, M. *Ancient bones: A treasure chest of intact extracellular matrix proteins.*

Maat, G. J. R.; Van Den Bos, R. P. M. & Aarents, M. J. *Rapid manual preparation of ground sections for the microscopy of natural bone tissue.*

Poster presentation**IV. VARIOUS PATHOLOGICAL CONDITIONS**

Baggieri, G. & Giacomo, M. *Three cases of exostosis of the auditory canal probably due to aquatic activity. 2*

Lunardini, A.; Vitiello, A.; Minozzi, S.; Caramella, D.; Catalano, P. & Fornaciari, G. *A case of ankylosing spondylitis from the roman imperial age. 4*

- Meyer, C. *Diseases of an Upper Class Roman Family from Colonia Augusta Treverorum*. 7
- Miranda, M. *Pathology and daily life in medieval times in Mafra: a case from Santo André necropolis*. 10
- Umbelino, C. & Wasterlain, S. *Some doubtful pathological conditions retrieved on the Portuguese Mediaeval Necropolis of Santa Maria (Sintra)*. 13
- Miquel-Feucht, M. & Villalain-Blanco, J. *Obstetric Paleopathology: A possible case of post-childbirth complication with death result*. 16
- Miquel-Feucht, M & Villalain-Blanco, J. *Eagle Síndrome and Paleopathology*. 19

V. AUXILIARY TECHNIQUES TO HUMAN SKELETAL ANALYSIS

- Tadmouri, G.; Basak, A.; Ozbal, H.; Özbek, M.; Erdal, C.; Chataignier, Y.; Zahed, L.; Le Mort, F. & Perrin, P. *Beta-thalassaemia in the prehistoric Eastern Mediterranean: Diagnosis in ancient bones*. 22
- Bachmeier, B.; Rohrbach, H.; Zink, A. & Nerlich, A. *Molecular analysis of the human remains of the two founders of the monastery of Tegernsee, South Germany*. 25
- Diegmann, J.; Joos, H. & Kreutz, K. *Are they closely related - aDNA analyses on several individuals from two medieval populations (Bartringen, Luxembourg) and Arlon (Belgium)*. 28
- Monsalve, M. V.; Stone, A.; Lewis, C.; Rempel, A.; Richards, M.; Straathof, D. & Devine, D. *DNA analysis of human ancient remains found in a glacier in Canada in 1999*. 31
- Sassi, A. & Congiu, T. *Anthropological and paleopathological investigations in the Medicine Faculty laboratories of Varese*. 34
- Congiu, T.; Sangiorgi, S. & Sassi, A. *S.E.M. in archaeological investigations*. 37
- Pérez-Pérez, A.; Maroto, J.; Fiego, J. & Turbon, D. *Non-Occlusal Microwear Analyses Indicative of Dietary Habits: a Neanderthal Research Project*. 40
- Martínez, N.; Romero, A.; De Juan, J. & Polo-Cerdá, M. *Methods of bone digestion for Trace Element Analysis in paleodietary studies*. 43
- Saunders, S.; Fitzgerald, C.; Bondioli, L. & Macchiarelli, R. *A Test of Histological Methods of Determining the Chronology of Accentuated Striae in Deciduous Teeth*. 47
- Rissech, C.; Rougé-Maillart, C.; Telmon, N.; Rougé, D. & Malgosa, A. *The determination of adult age at death using the acetabulum. A preliminary study*. 51

01.00 p.m. Lunch

02.15 p.m. **Session 5 MUMMIES ANALYSIS**

Chairpersons Conrado Rodríguez-Martín and Gino Fornaciari

Lecture *Paleopathological examination of preserved corpses: autopsy and radiology (Conrado Rodríguez-Martín, Spain)*.

Oral presentation

- Figueiredo, A.; Lago, M.; Duarte, C.; Filer, J.; Ikram, S. & Owens, L. *The Lisbon mummy project*.
- Nerlich, A.; Rohrbach, H. & Zink, A. *Identification of M. Bechterew in a series of ancient Egyptian mummies and skeletons*.

Hewitt, B. *Mummies in Manitoba (Canada)? Initial report on the remains of two partially mummified sub-adults from western Manitoba.*

Souza, S.; Reinhard, K. J. & Lessa, A. *Skull Necrosis: Artificial Deformation?*

Fornaciari, G.; Zavaglia, K.; Giusti, L.; Ciranni, R.; Marchetti, I. & Bertacca, G. *Human Papilloma Virus (HPV) in a 16th century italian mummy.*

Ciranni, R.; Giusti, L. & Fornaciari, G. *Ergonomic and non-ergonomic diseases of a 18th century musician: Luigi Bocherini (1743-1805).*

Ventura, L.; Leocata, P.; Beckett, R.; Conlogue, G.; Sindici, G.; Calabrese, A.; Di Giandomenico, V. & Fornaciari, G. *The natural mummies of Popoli. A new site in the inner Abruzzo region (central Italy).*

Gill-Robinson, H. *Mummies and Tattoos: An exploration.*

05.00 p.m. Coffee Break

05.15 p.m. **Session 6 DENTAL STUDIES – BIOLOGICAL AND CULTURAL APPROACHES**

Chairpersons Shelley Saunders and Alejandro Pérez-Pérez

Oral presentation

Cunha, E.; Ramirez Rozzi F.; Bermudez de Castro, J. M.; Martinon-Torres, M.; Wasterlain, S. & Sarmiento, S. *Hypoplasias in fossil hominids from the Middle Pleistocene of Atapuerca.*

Capasso, L.; Di Fabrizio, A. & La Verghetta, M. *Paleopathology of the upper Paleolithic human fossils from Fucino lake, central Italy.*

Figueiredo, A.; Duarte, C.; Pinheiro, V.; Lago, M. & Valera, A. *Paleopathological profiles of the human population buried at Perdigões (Reguengos de Monsaraz).*

Szikossy, I. & Bernert, Z. *Paleostomatological database of the Conquering Period Hungarians.*

Poster presentation

VI. MUMMIES ANALYSIS

Souza, S.; Gonçalves, M.; Rick, F.; Reinhard, K.; Ferreira, L.; Nascimento, F. & Araújo, A. *Louse Infection in Shrunken Heads. 44*

Sánchez, J. A.; Perea, B.; Rio, P. del & Prieto, J. L. *Study of a historical famous person in Spain. D. Juan Hurado de Mendoza y Luján. (Marqués de Santillana). 48*

Ciranni, R.; Giusti, L.; Garbini, F. & Fornaciari, G. *Rheumatoid Arthritis in a 16th century Italian mummy. 55*

Ventura, L.; Leocata, P.; Mancinelli, D.; Miranda, G. & Ventura, T. *Paleopathologic studies in the inner Abruzzo region (central Italy). 57*

Pap, I.; Palfi, G.; Kristof, L.; Barta, M.; Fletcher, H.; Spigelman, M. & Donoghue, H. *TB in the Mummies of Vác: Morphological Evidences of the Disease and Widespread Occurrence of Mycobacterium tuberculosis DNA from 18th-19th Century Hungarian. 60*

VII. DENTAL STUDIES – BIOLOGICAL AND CULTURAL APPROACHES

- Mariotti, V.; Bonfiglioli, B.; Belcastro, M. G.; Facchini, F. & Condemi, S. *Alterations of the temporomandibular joint (TMJ) in the Epipaleolithic population from Taforalt (Morocco).* **63**
- Bonfiglioli, B.; Mariotti, V.; Facchini, F.; Belcastro, M. & Condemi, S. *Interproximal grooves in two individuals from the Epipaleolithic necropolis of Taforalt (Morocco).* **66**
- Polo-Cerdá, M.; Romero, A.; Casabó, J. & De Juan, J. *The burials of Cova dels Blaus, Bronze age (Vall d’Uixó, Castelló, Spain): An approach to the paleodiet through dental paleopathology, occlusal wear and microwear pattern.* **69**
- Prowse, T.; Saunders, S.; Bondioli, L. & Macchiarelli, R. *Patterns of Dental Health in an Imperial Roman Skeletal Sample from Isola Sacra, Italy.* **70**
- Kocsis, G. & Marcsik, A. *Supernumerary occlusal (central) cusps in osteoarchaeological material.* **72**
- Fernandes, T. & Granja, R. *Hypoplastic lines in a Portuguese medieval population (Santiago do Cacém).* **73**
- Juan, J.; Caro, L., López, B.; Sánchez, C.; Rodríguez, H.; & Edo, M. *Dental paleopathology in a Mediaeval skeletal sample: Necropolis of “El Barrejo” (León, Spain).* **75**
- Rafigh, N.; Hardt, M. & Kreutz, K. *Age estimation by tooth cementum annulation of cremated teeth - possibilities and problems.* **76**

VIII. NEOPLASTIC CONDITIONS

- Liebe-Harkort, C. *A Viking age dermoid cyst.* **78**
- Marcsik, A.; Szathmáry, L.; Finnegan, M. *Multiple myeloma and metastatic skeletal lesions in osteoarchaeological samples.* **80**
- Bennike, P. & Hengstenberg, N. *Maglinant bone disease in skeletal material. How are they diagnosed?* **82**
- Costa, C.; Santos, S.; Fernandes, T. & Almeida, P. *Case report of a skull with multiple myeloma from a Portuguese medieval population (Estremoz).* **83**
- Bruintjes, T. & Marcsik, A. *Cancer in skeletons from the Antwerp cathedral, Belgium.* **84**
- Marques, C. & Matos, V. *Breast cancer and its palaeopathology. Four case studies from a Portuguese human skeletal identified collection (Lisbon, XXth Cent.).* **86**

.....

30 AUGUST

Visit to the Roman site and Museum of Conimbriga and the Buçaco National Forest

.....

31 AUGUST08.45 a.m. **Session 7 PRESENT AND FUTURE OF PALEOPATHOLOGY****Chairpersons** Donald Ortner and Luigi Capasso**Lecture** *Paleopathology: the next 40 years* (Donald Ortner, USA)**Round table** *Nomenclature in Paleopathology* (Luigi Capasso, Italy)**Oral presentation**Peral, D.; Fernández, M. R.; Navas, R.; Cáceres, M. P. & Etxeberria, F. *Bibliometric study of paleopathology's Spanish production.*

10.15 a.m. Coffee break

10.30 a.m. **Parallel symposia (A. Auditório da Reitoria; B. Departamento de Antropologia)****A. Population studies of paleopathology in Britain** (Charlotte Roberts, UK)Knüsel, C. & Boylston, A. *Little Leaguer's Elbow (Medial Epicondylar Fractures) in the Archaeological Record.*Ives, R. *Metacarpal Radiogrammetry and Age-Related Cortical Bone Loss in Post-Medieval London Collections.*Jakob, T. *Maxillary sinusitis in Anglo-Saxon England - a study of three populations.*Lewis, M. *Endocranial lesions in non-adult skeletons: their distribution and possible aetiology.*Roberts, C. *Tuberculosis in Britain: its history, palaeoepidemiology.*Redfern, R. & Brickley, M. *A biocultural analysis of the health of the Iron Age population of Dorset, England.*Brickley, M. *British Urban Health in the 18th and 19th Century.***B. Paleopathological analyses of the Moche "Giants" from Prehistoric Peru**

(Alana Cordy-Collins, USA)

Cordy-Collins, A. *Archaeological Context of the Dos Cabezas Giants.*Nelson, A. & Nelson, C. *Gigantism and the Individuals from Dos Cabezas, Peru.*Nelson, A.; Cordy-Collins, A.; Conlogue, G. & Beckett, R. *Radiographic and Endoscopic Analyses of the Giants from Dos Cabezas, Peru.*Lombardi, G. *Moche Giants: A CT-Scanning Survey.*Cordy-Collins, A. *Posterior Parietal Thinning: Five Moche Giants from Prehistoric Peru*Heflin, T. *Rib Trauma in a Moche Giant.*Tyson, R. *Toes of Atlas, a Young Moche Giant.*Geyer, P.; Larson, T. S. & Stroik, L. *Palynological Investigation of the Dos Cabezas Giants.*Ryser, G. *Paleoethnobotany at the site of Dos Cabezas.*

01.00 p.m. Lunch

02.30 p.m. **Session 8 HUMAN ACTIVITIES: OCCUPATIONAL STRESS MARKERS, JOINT DISEASE & TRAUMA****Chairpersons** Philip Walker and Rimantas Jankauskas**Oral presentation**Groot, M. *Paleopathological evidence for draught cattle.*

- D'Anastasio, R.; Michetti, E.; Pierfelice, L. & Capasso, L. *Neurosurgery 7000 years ago in central Italy.*
- Guillen, S. *Cranial deformation and early synostosis in prehistoric collections in the South central Andes.*
- Walker, P. & Steckel, R. *A Western Hemisphere Perspective on the History of Violence.*
- Rohrbach, H.; Zink, A.; Bachmeier, B.; Hagedorn, H.; Szeimies, U. & Nerlich, A. *Anthropological and paleopathological observations in the two founders of the monastery of Tegernsee, Southern Germany.*
- Jankauskas, R. *DISH incidence and social status correlations in Lithuanian skeletal materials.*
- Baxarias, J.; Campillo, D.; Subirá, M. E.; Ginestà, J. A. & Martínez, M. J. *Prevalence and location of arthrosis in an hispanian roman urban population.*
- Reinhard, K. & Wall, N. *Identifying Equestrian Skeletal Markers.*
- Al Oumaoui, I.; Brobeil, S. A.; Souich, P. *Markers of activity patterns in some Spanish populations.*

Poster presentation

IX. HUMAN ACTIVITIES: OCCUPATIONAL STRESS MARKERS, JOINT DISEASE & TRAUMA

- Rodrigues-Carvalho, C.; Souza, S. & Salles, A. *Occupational stress markers in prehistoric coastal populations from Rio de Janeiro State, Brazil: first results.* **5**
- Benus, R. & Masnikóva, S. *Markers of Occupational Stress in Great Moravian and Early Middle Ages Populations from Devín (Southwestern Slovakia).* **8**
- Cardoso, F. & Lopes, C. *Monastery way of life: a biocultural perspective based on osteological lesions.* **11**
- Kreutz, K. *Pathological changes of the vertebral column in the medieval population from Buggingen (Germany).* **15**
- Silva, C.; Cardoso, F. & Tavares, T. *An occupational marker of human activity. A case report from Arrentela (Portugal).* **18**
- Cardoso, H. & Lopes, L. *Skeletal markers of occupational stress in the toes: Report on a skeletal sample from Alcabideche (Cascais, Portugal).* **21**
- Silva, A.M. *A Neolithic skull lesion probably caused by an arrowhead.* **23**
- Berner, M.; Wiltschke-Schrotta, K. & Guld, S. *Intentional Defleshing in Bronze Age.* **26**
- Richier, A.; Ardagna, Y.; Vernet, G. & Dutour, O. *A case of beheading dating from the celtic period (1st BC, Cournon, France).* **29**
- Wiltschke-Schrotta, K.; Berner, M. & Pany, D. *A new find of an artificially deformed skull in Austria.* **32**
- Teegen, W-R. & Henke, D. *"Trephination" following sharp skull trauma in late Roman Trier/Augusta Treverorum (Germany): A CT investigation.* **35**
- Smrčka, V.; Kuelka, V. & Melkova, J. *Meningioma probable reason of trephination.* **38**
- Gjerdrum, T.; Holl, A.; Maes, K. & Walker, P. *West African Trephination: Skeletal remains from the Tora Sira Tomo settlement complex in Burkina Faso.* **41**

Pinto Reis, M. & Pereira, C. *A case of multiple traumas in a individual male from Grão Vasco Museum (Viseu - Portugal)*. **45**

Polo-Cerdá, M.; Piquer, H. & García-Prósper, E. *Fracture, surgical intervention or aneurysm? in a skeleton of the XV century, in the parochial cemetery of Puçol (Valencia, Spain)*. **49**

Kjellström, A. *A Sixteenth Century Warrior Grave from Uppsala, Sweden*. **52**

Silva, C. *An individual case of multiple trauma Freixo (Portugal)*. **54**

Neri, R. & Lancellotti, L. *The analysis of the fractures of the lower limb in a skeleton of an adult carpenter of nineteenth century*. **58**

X. CONGENITAL DISEASES

Cunha, E.; Krever, M. & Scmitz, P. *A rare case of skeletal dysplasia from Içara (Santa Catarina, Brasil) from 1000 BP*. **61**

Almeida, P.; Granja, R.; Santos, S. & Costa, C. *Styloid process agenesis in an individual from a Portuguese medieval cemetery (Flor da Rosa)*. **64**

XI. METABOLIC DISEASES

Ferreira, M. T. *A scurvy case in a young child from Monte da Cegonha (Vidigueira - Portugal)*. **67**

Lunardini, A.; Vitiello, A.; Minozzi, S.; Pantano, W.; Caramella, D.; Catalano, P. & Fornaciari, G. *A severe case of rickets in the roman imperial age*. **71**

Schamall, D.; Teschler-Nicola, M. I.; Kainberger, F.; Tangl, S.; Brandstätter, F.; Patzak, B. & Plenk, H. *Changes in Trabecular Bone Structure in Rickets and Osteomalacia - The Potential of a Medico-Historical Collection*. **74**

XII. FORENSIC CASES

Oliveira, R.; Silva, S.; Uchoa, D.; Mesquita, R. & Nunes, F. *Fungal infiltration in the human dentine: archaeology and forensic implications*. **77**

Cordeiro, C.; Pinheiro, J.; Cunha, E.; Martin-Dupont, S. & Vieira, D. *A case of a severe venous pathology as a bridge between forensic anthropology and anthropology of past populations*. **79**

XIII. SKELETAL COLLECTIONS: CONTRIBUTIONS TO PALEOPATHOLOGY

Micalizio, S. & Ferrari, L. *The restoration and study of the osteology collection of the Pathology Museum in Turin*. **81**

Judd, M. *The Wendorf Skeletal Collection at the British Museum*. **85**

Rasteiro, A. *To the museum of the Faculty of Medicine. Coimbra 1288-2002*. **87**

06.15 p.m. **PPA Executive Committee Meeting**

08.00 p.m. Social dinner and award reception at S. Marcos Palace

Fados de Coimbra by *Grupo de Fados Aeminium*

Raffle of surprise prizes

Shall we dance? by Jacques and Amélia Houart

.....

ABSTRACTS

DOES PATHOLOGICAL FINDINGS REFLECT EXCAVATION TECHNIQUES, PRESERVATION OR HEALTH STATUS?

Arcini, C.A.

National Heritage Board UV Syd, Lund, SWEDEN

Caroline.Arcini@raa.se

The relatively high frequency of common and uncommon pathological findings from a Medieval cemetery in Åhus, north-eastern Scania, Sweden, has raised the question whether pathological findings reflects reality or bias. The material derives from the cemetery that belonged to the Black Friars Dominican Convent, and was in use 1254-1536 AD. Men, women and children in all age groups were buried in the cemetery, which indicates that it was not only used by the Black Friars themselves, but also other individuals of the society. The material consists of 265 more or less complete skeletons. In comparison with the vast number of Medieval skeletal materials that has been subjected to osteological analysis in Scania (c. 7000 individuals), the material from Åhus stands out in many respects, both with respect to common and uncommon pathological conditions. In my talk, I will address at least two possible explanations for this fact. The high frequency of pathological conditions may reflect - a real picture, indicating that there are substantial differences with respect to health status between Medieval urban centres from different parts of Scania, - a joint contribution of both exceptional preservational conditions and an archaeological excavation emphasising the complete recovery of skeletal remains.

Keywords: Excavation techniques, Preservation, Health status, Black Friars, Medieval, Åhus

ORAL

MARKERS OF ACTIVITY PATTERNS IN SOME SPANISH POPULATIONS

Al Oumaoui, I.¹; Brobeil, S.¹; Souich, P.¹

¹ Laboratorio de Antropología, Facultad de Medicina, Universidad de Granada, SPAIN
c-pascual@excite.com

A study was undertaken of enthesophyte presence in the human remains of several ancient Spanish populations. The frequencies of enthesophytes by side and sex were studied and the different populations were compared. These populations, from prehistoric and medieval times, engaged in intense physical activity with differences probably due to ecological and sociocultural factors.

Keywords: Enthesophytes, Muscular development, Sexual dimorphism

ORAL

STYLOID PROCESS AGENESIS IN AN INDIVIDUAL FROM A PORTUGUESE MEDIEVAL CEMETERY (FLOR DA ROSA)

Almeida, P.¹; Granja, R.¹; Santos, S.¹; Costa, C.¹

¹ Biological Anthropology Laboratory, Department of Biology, Évora University, PORTUGAL
brasalmeida@hotmail.com

A skull from an adult male individual, exhumed from a Portuguese medieval cemetery (Flor da Rosa), presents an agenesis of the styloid processes. This condition is analysed to verify the implications of it in this individual.

Keywords: Medieval, Congenital pathology, Cranium

POSTER

MOLECULAR ANALYSIS OF THE HUMAN REMAINS OF THE TWO FOUNDERS OF THE MONASTERY OF TEGERNSEE, SOUTH GERMANY

Bachmeier, B.¹; Rohrbach, H.²; Zink, A.²; Nerlich, A.²

¹ Department of Clinical Chemistry and Clinical Biochemistry, Surgical Clinic, Ludwig-Maximilians-Universität München, GERMANY

² Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

Andreas.Nerlich@extern.lrz-muenchen.de

Our anthropological and paleopathological investigation of human remains of the two founders of the monastery of Tegernsee, South Germany, strongly suggested that the two skeletons recently recovered from the cloister church are authentic. In order to verify the possible relationship between the two individuals we performed a molecular investigation on skeletal samples. Therefore, ancient DNA (aDNA) was extracted according to previous protocols and used to analyse a set of 10 short-tandem repeat loci (STRs) by multiplex PCR technique using a commercial system widely used in forensic medicine (AmpFISTR-Profiler Plus) covering the autosomal STRs D3S13581, D3S13582, vWA, FGA, Amel, D8S1179, D21S11, D18S51, D5S8181 and D13S317 and D7S820. In addition, mitochondrial aDNA (mtDNA) was investigated. Using this approach and including a whole series of controls (negative controls and parallel analysis of all potentially contaminating coworkers), we obtained for both individuals a specific sequence which could clearly be attributed to the historic persons. Up to now we could not detect any mutation in the hypervariable region of the mtDNA of both individuals. This suggests that both were brothers rather than father and son. This will additionally be clarified by further analysis of the mtDNA. Thereby, our molecular analysis provides not only circumstantial evidence that aDNA analysis of more than 1000 year old material reveals a specific and unambiguous result, but also confirms the historic legend that the monastery was founded by two brothers.

Keywords: Molecular analysis, Relationship, Molecular genetics

POSTER

THREE CASES OF EXOSTOSIS OF THE AUDITORY CANAL PROBABLY DUE TO AQUATIC ACTIVITY

Baggieri, G.¹; Giacomo, M. di¹

¹ Ministero per i Beni e le Attività Culturali, Sez. di Antropologia, Roma, ITALY
margas@inwind.it

Here we present three cases of exostosis of the auditory canal, all belonging to male subjects. They come from three Italian regions, close to the sea, which were important for fishing, harbour activity and thermal baths. The first case originated in Brindisi, and was found in a Roman necropolis of fishermen, a few hundred meters from the sea. The corpse of a male deceased at the age of about forty years was found in a small tomb from 200 A.D. On the bottom surface of this tomb there were some oyster shells and some incisions representing waves. He has an exostosis, as large as a pea, in the right auditory canal. We can infer that the subject was probably a fisherman of oysters. The second case is the Athlete of Taranto, an important personage from 500 A.D., who died at the age of nearly thirty years. He has a small exostosis in the right auditory canal. He probably fished for shell-fish for nourishment, as the palaeo-nutritional analyses demonstrated, but he also swam in order to train. The third case comes from the ancient thermal baths of Ostia Antica, near Rome. He has two large exostoses in both auditory canals, which means that he probably suffered from hypacusia. We can infer that the exostoses are due to the alternation of bathing in the calidarium, the tepidarium, and the frigidarium. The three cases we studied all have the aquatic, marine and thermal ambients in common. The three exostoses, unlike the exostoses of genetic and hereditary natures, could be explained by the inflammatory stress caused by the continuous presence of water inside the auditory canals. This same condition is very common even today, particularly with those who are involved in canoeing and other various aquatic sports.

Keywords: Exostosis, Hearing, Water, Ancient

POSTER

PREVALENCE AND LOCATION OF ARTHROSIS IN AN HISPANIAN ROMAN URBAN POPULATION

Baxarias, J.¹; Campillo, D.¹; Subirá, M.^{1,2}; Ginestà, J.; Martínez, M.

¹ Museu d'Arqueologia de Catalunya, Barcelona, SPAIN

² Unitat d'Antropologia, Departament de Biologia Animal, Biologia Vegetal i Ecologia, Facultat de Ciències de la Universitat Autònoma de Barcelona, SPAIN

jbax@sumi.es

Arthrosis is a degenerative process, frequently found in paleopathology studies. It is caused by the waste and loss of articular cartilage with the subsequent articular cavity affection. Arthrosis was frequent between the romans exhumated in the necropolis of Francolí, in Tarragona (Spain), and it was present in a 76% of people over 20 years old. Both sexes were affected per equal and exists a clear relation with aging. The curious detail is the different distribution in the articular areas affected respect to the actual sites, over all when we discriminated it between both sexes. The arthrosis of rachis was the most frequent and didn't show differences between males and females. While women's arthrosis was most frequent in the temporomandibular area and the knee, in the men we found more affected the elbow and the wrist. Secondary arthrosis represented a 5% of total. Actually the hip arthrosis is more frequent in females and knee arthrosis affected both sex per equal, in our roman necropolis the knee arthrosis predominated in women, while the hip area affected both sex without difference.

Keywords: Arthrosis, Roman period, Prevalence, Tarragona

ORAL

A PROBABLE CASE OF LEPROSY IN THE EARLY MIDDLE AGES NECROPOLIS OF VICENNE-CAMPOCHIARO (MOLISE, ITALY)

Belcastro, M.¹; Mariotti, V.¹; Facchini, F.¹; Dutour, O.²

¹ Dip. di Biologia, E.S. Sezione di Antropologia, Università degli Studi, Bologna, ITALY

² UMR 6578 CNRS, Université de la Méditerranée, Service d'Anthropologie Biologique, Faculté de Médecine de Marseille, FRANCE

belcastr@alma.unibo.it

In the young-adult male skeleton (T.144) of the Early Middle Ages necropolis of Vicenne-Campochiaro (Molise, Italy) pathological traits of a chronic infection disease have been found. In particular rhino-maxillary and palatal changes and diaphyseal remodeling of some metatarsal bones seem to be diagnostic features of leprosy. Macroscopic morphological and radiological analyses have been applied. On the basis of both anthropological and cultural elements (twelve contextual burials of horseman, horse and àvar stirrups), an Asiatic community (proto-Bulgarian people) has been recognized in the necropolis of Vicenne-Campochiaro (second half of the 7th c.). This population could have been settled in the Lombard territory between Sepino, Isernia and Bojano, awarded from the Lombard Duke of Benevento to militarily control those territories against the Byzantines.

Keywords: Leprosy, Human skeletal remains, Early Middle Ages, Italy

ORAL

MALIGNANT BONE DISEASE IN SKELETAL MATERIAL. HOW ARE THEY DIAGNOSED?

Bennike, P.¹; Hengstenberg, N.¹

¹ Lab. of Biological Anthropology, University of Copenhagen, DENMARK
bennike@antrolab.ku.dk

A medieval skeleton of a 30-40 year old woman from Denmark with multiple malignant bone changes will be discussed. The changes are located in various bones with the majority on the skull and pelvic bones. They are mainly osteolytic but some osteoblastic changes are also seen. The changes do not fit completely with the classic pattern of any disease and the most possible differential diagnoses will therefore be discussed. We believe that they include metastatic carcinoma, multiple myeloma or leukemia.

Keywords: Malignant bone disease

POSTER

MARKERS OF OCCUPATIONAL STRESS IN GREAT MORAVIAN AND EARLY MIDDLE AGES POPULATIONS FROM DEVÍN (SOUTHWESTERN SLOVAKIA)

Benus, R.¹; Masnicová, S.²

¹ Department of Anthropology, Comenius University, Bratislava, SLOVAKIA

² Department of Criminalistics and Forensic Sciences, Bratislava, SLOVAKIA

benus@nic.fns.uniba.sk

Two skeletal samples – Early Medieval (11th – 12th century) from the locality Devín-Hrad (216 individuals) placed inside of fortification and Great Moravian (9th century) from the locality Devín-Za kostolom (110 individuals) placed outside of fortification were analyzed. The presence of osteoarthritis (OA), spondylosis, enthesopathies and stress related trauma was recorded and prevalence of diseases was calculated with focus to reconstruct physical stress. Intersexual, interpopulation and bilateral differences were studied. Among males there were found the highest prevalences of OA in arm and hip joints in both samples. The highest OA prevalences were found in elbow and hip joints among females from the locality Devín-Hrad and in acromioclavicular and sternoclavicular joints among females from the locality Devín-Za kostolom. Results of spondylosis, vertebral OA and enthesopathies analysis confirmed heavy manual work involving mainly upper limbs activities in both populations.

Keywords: Osteoarthritis, Spondylosis, Enthesopathies, Devín, Paleopathology, Slovakia

INTENTIONAL DEFLESHING IN BRONZE AGE

Berner, M.¹; Wiltshcke-Schrotta, K. ¹; Guld, S. ¹

¹ Department of Archaeological Biology and Anthropology, Natural History Museum, Vienna,
AUSTRIA
margit.berner@nhm-wien.ac.at

Three skeletons, two women and one foetus were excavated in a Middle Bronze Age (1600-1250 B.C.) settlement pit in Reichersdorf, Lower Austria. In this irregular burial site both adults were found with the lower legs missing and the skulls fractured, possibly indication of a violent impact. Parallel striations were detected on the bone surface of the outer side of the ribs and on the long bones. These marks have been investigated macroscopically and microscopically and could be identified as cut marks. The distribution of these marks on the whole skeleton, all concentrated on insertion points of tendons or muscles, indicate that both women had been defleshed before they had been deposited in the settlement pit.

Keywords: Middle Bronze Age, Defleshing, Cut marks, Austria

POSTER

PALEOPATHOLOGICAL ANALYSIS OF HARRIS'S LINES IN THE LATE ROMAN NECROPOLIS OF PRAT DE LA RIBA IN TARRAGONA (SPAIN)

Berrocal, M.^{1,2}; Garcia, E.^{1,2}; Baxarias, J.²; Campillo, D.²; Subirá, M.^{1,2}

¹ Unitat d'Antropologia, Departament de Biologia Animal, Biologia Vegetal i Ecologia, Facultat de Ciències de la Universitat Autònoma de Barcelona, SPAIN

² Museu d'Arqueologia de Catalunya, Barcelona, SPAIN

isaberrozara@hotmail.com

Since Harris discovered transverse lines (Harris's lines) at the end of long bones of the skeleton in 1931, many studies have been carried out in order to estimate the growth age and its interpretation as a potential indicator of health conditions, as well as, other indicators like enamel hypoplasia. Most authors agree that Harris's lines are the consequence of the growth reestablishment after a temporal stop of the growth due to stress episodes, like diseases or starvation, but, nowadays, the exact ethiology is still not clear. Most of the published studies are based on the study of a relative small sample. However, our study is, in this sense, a different one, because it is made up of 243 burials from a Late Roman Necropolis from the end of the third century a.C. to the second half of the fifth century a.C. This Necropolis was discovered in 1993 in a 1500 m² area intended for the construction of a private parking garage in the Prat de la Riba Street, one of the most important streets in Tarragona downtown. The big amount of burials makes this necropolis an excellent candidate to carry out a comprehensive analysis about Harris's lines. Our study expects to make a thorough analysis of the growth age of Harris Lines starting from X-rays, taken in a front and back position from the tibiae, femurs and humerus, from the entire population. Apart from the information given by the archeological excavation, we have at our disposal other studies on this necropolis about the morphometric and odontologic characteristics, trace and pathological elements, etc..., that will help us to achieve our point. That is to say, to associate the incidence and the growth age of Harris's lines with the stressor types. And, in this way, to understand the relations between certain food lack or certain diseases in the growth period of an individual.

Keywords: Harris's lines, Paleopathologies, Late Roman period, Tarragona

ORAL

INTERPROXIMAL GROOVES IN TWO INDIVIDUALS FROM THE EPIPALEOLITHIC NECROPOLIS OF TAFORALT (MOROCCO)

Bonfiglioli, B.¹; Mariotti, V.¹; Facchini, F.¹; Belcastro, M.¹; Condemi, S.²

¹ Dip. di Biologia, E.S. Sezione di Antropologia, Università degli Studi, Bologna, ITALY

² Centre de Recherche Français de Jérusalem, Jérusalem, ISRAEL

atteden@hotmail.com

Interproximal grooves are extramasticatory alterations located at the cement/enamel junction. These lesions are encountered among humans throughout the world and are also present in ancient human remains (*Homo habilis*, *Homo erectus* and Neanderthals). Various etiological factors (hygienic or individual habits, palliative measures, etc.) have been proposed to explain their onset. The examination of dental remains from the Epipaleolithic necropolis of Tatoralt (Morocco, about 12-11000 BP) reveals the presence of 4 grooves in 2 young males. The morphological features of the lesions and the health conditions of the dentition have been examined and hypotheses are provided concerning etiological factors responsible for this trait.

Keywords: Interproximal grooves, Epipaleolithic, Teeth

POSTER

HEALTH PATTERNS OF PROTO-BYZANTINE POPULATIONS (6TH-7TH CENTURIES AD) IN SOUTH GREECE: THE CASES OF ELEUTHERNA (CRETE) AND MESSENE (PELOPONNESE)

Bourbou, C.

Wiener Laboratory, American School of Classical Studies at Athens, GREECE

chryssab@stud.soc.uoc.gr

Up to now, only scattered information exist about the history and bio-archaeology of Proto-Byzantine Greece, since no abundant records or major excavation projects refer to this turbulent era in question, highly marked by historical, social, economic and natural changes. The purpose of this study is to evaluate the impact of historical and environmental changes (i.e. invasions, natural disasters, such as earthquakes) on the health status and disease patterns of the once living populations at proto-Byzantine Eleutherna in Crete and Messene in Peloponnese. To test how individuals were affected by these changes, the human skeletal collections were analyzed for the presence of dental diseases, metabolic disorders, physical stress as evidenced in the frequencies of osteoarthritis, degenerative changes of the vertebral column and Schmorl's nodes on the vertebral bodies, infections and trauma. Furthermore, in order to delineate the role played by sanitary, social and other environmental conditions in infant mortality and survival, infant mortality is divided into neonatal (after birth-4 years) and postnatal (5-9 years old) categories. The results of the anthropological and paleopathological studies revealed interesting aspects on health and disease. The observed pathological conditions (i.e. metabolic disorders such as scurvy, dental diseases or degenerative joint diseases) suggest the differential adaptation ability of past populations to the changing environment; while the settlement of Eleutherna finally was abandoned during the first half of the 7th century AD, that of Messene enjoyed a prosperous life until early 9th century AD.

Keywords: Proto-Byzantine, Greece, Stress, Infant mortality

ORAL

BRITISH URBAN HEALTH IN THE 18TH AND 19TH CENTURY

Brickley, M.

Department of Ancient History & Archaeology, University of Birmingham, GREAT BRITAIN

m.b.brickley@bham.ac.uk

Archaeological excavations undertaken last year in the churchyard of St. Martin's, Birmingham, central England by the Birmingham University Field Archaeology Unit on behalf of CgMs Consulting, recovered 875 individuals. The majority of the individuals date to the 18th and 19th centuries, a period during which Birmingham was undergoing rapid expansion and growth, as it became one of the leading industrial centres of Britain. Over half of the individuals excavated were 75% + complete and in the majority of cases the bone surface was well preserved (defined as not weathered or Stage 1 [Behrensmeyer, 1978]). Approximately 30% of individuals are sub-adult and these are also very well preserved. The large sample of well preserved adults and sub-adults provides an ideal opportunity to look at the health of individuals living in an urban, industrialised setting, in which levels of air pollution are known to have been extremely high. Conditions relating to poor urban living conditions such as vitamin D deficiency will be examined. Work is still in its initial stages, but analysis to date demonstrates that many of the osteological features of vitamin D deficiency diseases observable through visual and radiological examination are presented in an extreme form. This study provides an ideal opportunity to observe and document conditions relating to the health of urban communities.

Reference:

Behrensmeyer, A. K. (1978). Taphonomic and ecologic information from bone weathering. *Paleobiology*, 4: 150-162.

Keywords: 18th and 19th century, Urban, Vitamin D deficiency

SYMPOSIUM

HEALTH AND DISEASE IN THE CITY OF GRANADA (SPAIN) DURING THE XVIIITH CENTURY

Brobeil, S.¹; Al Oumaoui, I.¹

¹ Laboratorio de Antropología, Facultad de Medicina, Universidad de Granada, SPAIN
jbrobeil@ugr.es

We present the demographical evolution of the population of Granada during the XVIIth century. Our analysis is based on parish records and uses several methods. We focus on epidemics, especially two plague epidemics, mortality crises, the recovery from these and the resulting demographic increases.

Keywords: Epidemics, Historical demography, Mortality crises

ORAL

SKELETAL ATROPHY AND THE PROBLEM OF THE DIFFERENTIAL DIAGNOSIS OF CONDITIONS CAUSING PARALYSIS

Brothwell, D.

Department of Archaeology Institute of Advanced Architectural Studies, York, UK

☎ +44 1904 433901

📠 +44 1904 433902

There are now quite a number of cases of skeletal atrophy, ranging from widespread to very limited extent in the body. The cases are from different populations and time periods. Usually, the pathology is considered to be the result of early trauma or a long term sequel to the poliomyelitis virus. In fact there are various alternative diagnosis to this infection, and these will be discussed in relation to some of the archaeological cases, and especially a recent find from southern England. In particular it seems important when considering such pathology to take account of all possible explanations, traumatic, infectious and genetics

Keywords: Skeletons, Paralysis, Atrophy, Polimyelitis, Differential diagnosis, Muscular dystrophy

ORAL

CANCER IN SKELETONS FROM THE ANTWERP CATHEDRAL, BELGIUM

Bruintjes, T.¹; Marcsik, A.²

¹ Barge's Anthropologica, Leiden, THE NETHERLANDS

² Department of Anthropology, University of Szeged, HUNGARY

t.bruintjes@consunet.nl

The examination of 854 skeletons from the Antwerp Cathedral, Belgium (dating from the 15th to 18th century) by the late Paul Janssens and A. Marcsik showed four cases of malignant neoplasma. In three cases the pathology was compatible with secondary (metastatic) carcinoma. This concerned a 40 year old female with multiple osteolytic lesions in the cranial vault, a 55-60 year old female with mixed osteoblastic and osteolytic lesions in a lumbar vertebra, the left scapula and both pelvic bones, and one individual of unknown age and sex with a large osteolytic lesion in the cranial vault. The fourth case was a 30-40 year old male with a probable primary carcinoma of the sinonasal region. The observed number of tumours in this population lies within the range of expected (Waldron, 1996).

Reference:

Waldron, T. (1996). What was the Prevalence of Malignancy Disease in the Past? *Int J Osteoarchaeol.*, 6: 463-470.

Keywords: Carcinoma, Neoplasma

POSTER

CRIBRA ORBITALIA IN A PACIFIC ISLAND CONTEXT: VARIATION IN THE EXPRESSION OF IRON-DEFICIENCY ANAEMIA BETWEEN TWO PACIFIC ISLAND SKELETAL SAMPLES

Buckley, H.

University of Otago, Dunedin, NEW ZEALAND

hallie.buckley@stonebow.otago.ac.nz

Skeletal samples from two Pacific Island were assessed for pathological lesions. One of these samples was from Taumako Island in the southeast Solomon Islands, Melanesia. The other sample was from Tongatapu in the Kingdom of Tonga, Polynesia. One of the aims of this research was to investigate whether ecological differences between the two island groups affected the prevalence of cribra orbitalia. All available cranial material was examined for evidence of diploic expansion using the methods of Stuart-Macadam (1985). Lesions of the orbits were graded from 1-3 for severity according to Stuart-Macadam (1985) and evidence of hyperplasia of the bones were recorded according to Ortner and Putschar (1981). Taumako: All age groups were affected in this sample. Overall 36% (n=64/178) of the sample from Taumako had evidence of cribra orbitalia and/or porotic hyperostosis. The highest prevalence of lesions was observed in subadults between 6 and 15.9 years old. The subadults had more grade 3 orbital lesions while the adults had higher proportions of grade 1 lesions. Tonga: Overall, 19% (n=12/62) of the sample was affected. No individuals under 0.9 years of age had lesions and the highest proportion affected were subadults between 1 and 5.9 years old. No grade 3 lesions were observed in the Tongan sample. Overall the proportion of affected individuals was higher in the Taumako sample than the Tongan sample. The observed differences in the expression of iron-deficiency anaemia between these two groups are discussed within the context of the Pacific Island diet and disease environment.

Keywords: Cribra orbitalia, Pacific Islands, Regional differences

ORAL

**SELECTIVE MIDDLE ARCHAIC FUNERARY RITUALS FROM WEST-CENTRAL ILLINOIS (US),
NEW DATA ON PATHOLOGY AND DEMOGRAPHY**

Buikstra, J.¹; Komar, D.¹

¹ Department of Anthropology, University of New Mexico, Albuquerque, USA
buikstra@unm.edu

In this paper, we review newly developed data on pathology and demography for the Middle Archaic 3 or Helton Phase Component (~5800-4900 BP) of the Koster site, Greene County, Illinois. Previous research had indicated that during the Helton Phase, cemetery samples were segregated by age and by health status as reflected in deforming skeletal pathology. Our expanded sample reflects the same pattern, including an adult female whose pelvic cavity contained a hard, calcified spherical object whose largest diameter is approximately 2.1 cm. Gross and radiographic examination indicates that the object is hollow, with two laminar layers approximately 1 mm. thick. Radiographic analysis also revealed a network of blood vessels with a defined origin and extending across most of the shell. We focus upon a differential diagnosis for this object, considering the following alternatives: calcified ovary, calcified ovarian fibroma, calcified simple ovarian cyst, psammoma body, calcified omental nodule, urinary calculus, dermoid cyst, calcified renal cyst, mesenteric cyst or carcinoid tumor, leiomyoma or leiomyoma, neoplasm, calcified abscess, fecalith or appendicolity, calcified lymph node, and lithopedion. Recognizing the difficulty of distinguishing between these alternatives in the absence of soft tissue, we eliminate all except the following: lithopedium, calcified ovary, calcified simple ovarian cyst, and calcified lymph node. Of these, an eggshell pattern calcified lymph node or a calcified ovary appears the most likely affliction.

Keywords: Lithopedium, Calcified ovary, Calcified simple ovarian cyst, Calcified lymph node, North American Archaic, Funerary ritual

ORAL

SPINAL TUBERCULOSIS (POTT'S DISEASE) IN A SKELETON FROM ROME SUBURBIA (I CENTURY AD)

Canci, A.¹; Nencioni, L.²; Minozzi, S.¹; Catalano, P.²; Fornaciari, G.³

¹ Dep. of Ethology, Ecology and Evolution, Unit of Anthropology, Univ. of Pisa, ITALY

² Archaeological Superintendence of Rome, ITALY

³ Dep. of Oncology, Section of Palaeopathology, University of Pisa, ITALY

canci@discau.unipi.it

This poster reports a case of spinal disease in an adult male coming from a tomb dated to I century AD (Imperial Age), excavated along the ancient route of the Via Nomentana. The skeleton, complete and sufficiently well preserved, belongs to a 25-35 years old individual. The lower thoracic tract from T6 to T12 shows several lesions: a large circular erosion of the T10 body, huge scalloping of anterior surface of T6 and T9 vertebral bodies, posterior erosion and fusion of T6 and T8 bodies, with subsequent disappearance of the intervertebral spaces. Wedge-shaped aspect of the bodies of T11 and T12 is also present. The smooth-walled osseous contours of the lesions and the lack of vertebral collapse indicate healing of the subject with slight kyphosis. The others bones don't show others pathological signs with the exception of a healed fracture of the proximal end of the left tibia. Differential diagnosis with the scalloped aspect of the lesions of the bodies, preservation of the vertebral arches and lack of massive bone regeneration clearly reveal a case of spinal tuberculosis (Pott's disease).

Keywords: Tuberculosis, Pott's disease, Roman, Italy

POSTER

PALEOPATHOLOGY OF THE UPPER PALEOLITHIC HUMAN FOSSILS FROM FUCINO LAKE, CENTRAL ITALY

Capasso, L.¹; Di Fabrizio, A.¹; La Verghetta, M.¹

¹ Museo di Storia delle Scienze Biomediche, Università "D'Annunzio", Campus Universitario
"Madonna delle Piane", Chieti, ITALIA
mssb@unich.it

The author presents the results of paleopathological study carried out on the bone remains of 5 individuals buried in the Caves around the Fucino's caves, and dating with radiocarbon at about 12,000 years before present. The anthropological study provided the sex and age of each individual (3 males, 1 female, and 1 juvenile), and sheds light on the morphologic characters that relate these materials to Cro-magnon human type. The analysis of the non-human bone remains shed light on nutritional supply of this upper Paleolithic community, demonstrating that the fishing was one the major activity of the group. On the paleopathologic point of view, Author shows the very high frequency of teeth diseases, specially the very important dental abrasion, with osteolysis of upper and lower jaws. Also interproximal grooves are well evident in three subjects, demonstrating the very hard activities requested to the teeth. Other pathologies are demonstrated, as cranial variations, diploic granuloma and palatine torus. Finally, taphonomic study provides the post-mortem lesions due both to animal activities and to geological events.

Keywords: Upper Paleolithic, Fucino lake, Dental abrasion

ORAL

MONASTERY WAY OF LIFE: A BIOCULTURAL PERSPECTIVE BASED ON OSTEOLOGICAL LESIONS

Cardoso, F.¹; Lopes, C.¹

¹ BioAnthropos Lda., Instituto Pedro Nunes, Coimbra, PORTUGAL
francealves@netc.pt

The purpose of the present paper is to present, and discuss, several pathological lesions found in a male individual exhumed in the Alcobaça Monastery (Portugal). The left femur displays a probable traumatic lesion, fully remodelled. This one can explain the severe osteoarthritis lesions recorded in several articular surfaces. Vertebrae, distal arms, hands and hips are the bones affected; most of them exhibit eburnation facets. These pathological osteoarthritic lesions are most probably related with daily activities, and a consequence of the severe trauma suffered by the individual, which certainly disabled him of an ordinary life.

Keywords: Alcobaça, Trauma, Osteoarthritis

POSTER

SKELETAL MARKERS OF OCCUPATIONAL STRESS IN THE TOES: REPORT ON A SKELETAL SAMPLE FROM ALCABIDECHÉ (CASCAIS, PORTUGAL)Cardoso, H.¹; Lopes, L.¹¹ Museu Nacional de História Natural, Área de Zoologia e Antropologia (Museu Bocage), Lisboa,
PORTUGAL

hcardoso@fc.ul.pt

Occupational stress markers on the human skeleton play an important role in the analysis and interpretation of activity patterns and socio-economic life in past populations. In this paper, bony changes on the phalanges of the feet are described in a skeletal sample from Alcabideche (Cascais, Portugal). These changes refer to well-developed flexor ridges on the proximal phalanges of the lateral four toes. The morphology and location of these alterations indicates strong flexor tendons and suggests that they were probably produced by stress brought about by frequent or repeated dorsiflexion of the metatarso-phalangeal joints. The question of what regular or habitual activity might have produced these alterations is discussed according to known historical documents that report the way of life of this population and local traditional occupations that have persisted through time.

Keywords: Occupational stress markers, Foot, Alcabideche

A SEVERE CASE OF PYOGENIC INFECTION OF THE LUMBAR SPINE

Carracho Macedo, M.

Soure, PORTUGAL

carrachomacedo@hotmail.com

A complete skeleton of a young adult male, exhumed from the Necropolis of Miroiços (Cascais), exhibits a striking pathology on the lumbar spine. It consists of a kind of a spinal abscess affecting the second, third and fourth lumbar vertebrae which became completely ankylosed after the healing, forming a block where besides the great quantity of new bone formation, a cloaca can be identified. When looking for the probable etiology, pyogenic infection of the lumbar spine becomes the most probable cause. Yet, the differential diagnosis is done.

Keywords: Lumbar spine, Infectious pathology

POSTER

CHRONIC ARSENIC POISONING AND HEMATOLOGIC DISORDERS IN PREHISTORIC NATIVE AMERICANS FROM NORTHERN CHILE

Castro, M.^{1,2,3}; Ferrada, C.⁴; Valle, L.⁴; Benavente, A.¹; Aspillaga, E.^{1,5}

¹ Departamento de Antropología, Universidad de Chile, Santiago, CHILE

² Programa de Morfología, Instituto de Ciencias Biomédicas, Universidad de Chile, Santiago, CHILE

³ Subdirección de Museos, DIBAM, Santiago, CHILE

⁴ Centro de Estudios para el Desarrollo de la Química (CEPEDEQ), Facultad de Ciencias Químicas y Farmacéuticas, Universidad de Chile, Santiago, CHILE

⁵ Programa de Genética Humana, Instituto de Ciencias Biomédicas, Universidad de Chile, Santiago, CHILE

macastro@uchile.cl

The Atacama Desert is a region where the scarce water supplies are contaminated with a high concentration of arsenic. Among the general health effects associated with chronic arsenic exposure are cardiovascular and peripheral vascular disease, developmental anomalies, neurologic and neurobehavioral disorders, diabetes, hearing loss, portal fibrosis of the liver, lung fibrosis, hematologic disorders, and carcinoma (Tchounwou et al. 1999). Chronic arsenic poisoning has been demonstrated in prehistoric inhabitants from the northernmost region of Tarapacá, Chile, with 84% of individuals showing lesions. This paper examines the probable association between hematologic diseases and chronic arsenic poisoning in an Andean highland population where an unusual number of subadults show evidence of hematologic disorders and about 60% of adult individuals show high concentrations of arsenic in bone.

Keywords: Arsenic poisoning, Hematologic disorders, Prehistoric Chilean populations

ORAL

ERGONOMIC AND NON-ERGONOMIC DISEASES OF A 18TH CENTURY MUSICIAN: LUIGI BOCHERINI (1743-1805)

Ciranni, R.; Giusti, L.¹; Fornaciari, G.²

¹ Department of Oncology, Section of Paleopathology, University of Pisa, ITALY

² Dep. of Oncology, Section of Palaeopathology, University of Pisa, ITALY

r.ciranni@med.unipi.it

The study of the almost skeletonized natural mummy of the famous 18th century musician Luigi Boccherini (1743-1805) made it possible to elaborate an ergonomic model based on the study of acquired muscle-skeletal lesions, relating to his intense activity as baroque cellist. External examination, macroscopic analysis and total body radiographic study showed a relevant number of suggestive changes, due to repetitive strain injuries (RSI), such as severe rhizarthritis of the right thumb, heavy epicondylitis of the left elbow, loss of the physiological cervical and lumbar spine lordosis, high thoracic left scoliosis with maximum on T3-T4 and tibiae valgae. Elaboration of the ergonomic model was helped by direct and detailed observation and filming of the movements produced and of the positions acquired by a modern cellist during the performance of one of Boccherini's adagios. Even though the present-day cello is structurally different from the baroque instrument, the results obtained from the ergonomic model can be partially superimposed to the contemporary cellist. Soft-tissues studies revealed two non-ergonomic pathologies: a severe aortic atherosclerosis and several pleural and nodal calcifications. Histological examinations of the nodes allowed microscopic identification of the *Mycobacterium tuberculosis* bacillus, confirming the biographical data of Boccherini's death from tuberculosis. At present the node is submitted to molecular study to identify and sequence mycobacterial DNA.

Keywords: Ergonomy, Luigi Boccherini, Baroque cellist, Tuberculosis, Mummy

ORAL

RHEUMATOID ARTHRITIS IN A 16TH CENTURY ITALIAN MUMMY

Ciranni, R.; Giusti, L.¹; Garbini, F.; Fornaciari, G.¹

¹ Department of Oncology, Section of Paleopathology, University of Pisa, ITALY
r.ciranni@med.unipi.it

This study concerns the natural mummy of an adult woman, dated at the end of 16th century and found in the Basilica of S. Francesco in Arezzo (Tuscany). External examination suggested a severe form of arthritis. In order to investigate the nature of these lesions the body was studied by several imaging techniques such as normal X-ray, X-ray by mammography, total body CT and high resolution CT. Microscopic examination by stereomicroscopy was also performed. Diagnosis of Rheumatoid Arthritis (RA) was confirmed by the following findings: volar metacarpo-phalangeal subluxation of the third and fourth fingers; lateral deviation of all the fingers; large erosion of the metacarpo-phalangeal joints of the third and fourth fingers; minute and marginal erosions of the carpal bones; flaring of the bases of the first phalanxes; overlapping and fibular deviation of the toes; subluxation of the large joints. Accurate differential diagnosis performed on the basis of Rothschild's suggestions further supported the hypothesis of RA. The present study enters also the discussion regarding the ancientness of this disease. This diagnosis made it possible to confirm the presence of the disease in Europe during the second half of the 16th century and to backdate the first clinical report of Landreè Beauvais performed at the beginning of the 19th century.

Keywords: Rheumatoid arthritis, Italy, Renaissance, Mummy

POSTER

TWO CASES OF SYPHILIS FROM THE NECROPOLIS OF CARMO'S CONVENT

Codinha, S.

Departamento de Antropologia, Universidade de Coimbra, PORTUGAL
soniacodinha@yahoo.com

The recently excavated modern necropolis from the ruins of Carmo's Convent in Lisbon, stands out for the high number of recovered individuals (n=150). This necropolis had been used for approximately three centuries, from the 15th century until the famous 1755 earthquake, which completely ruined the Convent. Among the striking pathological cases detected during the field work, we here present and discuss two cases of syphilis. It concerns two female skeletons, one full adult and an adolescent, presenting lesions suggestive of syphilis. The cases are discussed on the context of their chronology and provenience. Besides, the question whether it concerns a congenital or venereal syphilis is approached.

Keywords: Modern, Adult, Adolescent, Syphilis

POSTER

S.E.M. IN ARCHAEOLOGICAL INVESTIGATIONS

Congiu, T.¹; Sangiorgi, S.¹; Sassi, A.²

¹ Università degli Studi dell'Insubria, Laboratorio di Morfologia Umana "L. Cattaneo", Varese,
ITALIA

² Università degli Studi dell'Insubria, Dipartimento di Medicina e Sanità Pubblica, Varese, ITALIA
anna.sassi@tin.it

The peculiarity of the Scanning Electron Microscope (SEM) is that it gives three-dimensional pictures in a wide range of magnifications; this makes it a useful instrument to fill the gap between macroscopic observation, even if supported by optical lenses, and ultrastructural analysis. It is in fact possible to see the specimens in a range of magnification from 20x to 300000x. The coupling of this instrument with a x-ray spectrometer adds analytical data to the morphological ones. In particular we use an energy dispersive spectrometer that can detect the elemental composition and can map the element distribution in a chosen microscopic field.

Keywords: Scanning electron microscope, Ultrastructural analysis, Microanalysis

POSTER

PAGET'S DISEASE AT TORRE DE PALMA?Cook, D.¹; Powell, M.²¹ Department of Anthropology, Indiana University, USA² Paleopathology Association, Kentucky, USA

cook@indiana.edu

An adult male, TP 21185, from a cemetery at the Roman *villa* of Torre de Palma, Alto Alentejo, Portugal, shows extensive new bone formation on the medial and lateral surfaces of the right *ilium*. The periosteal lesions are loosely organized, fibrous, and up to 6 mm. thick. There is no remaining normal cortex, and underlying trabecular bone is coarsened. There is fine, nodular new bone on the small recovered portion of the acetabulum. Radiographic and histological analysis help to differentiate among Paget's disease, fibrous dysplasia, and metastatic carcinoma in this interesting specimen.

Keywords: Lusito-Roman, Paget's disease, Paleopathology

ORAL

EXTRACTING AUTHENTIC ANCIENT DNA SEQUENCES FROM SKELETAL REMAINS

Cooper, A.; Gilbert, T.

Henry Wellcome Ancient Biomolecules Centre, Department of Zoology, University of Oxford, UK

Alan.cooper@zoo.ox.ac.uk

Ancient DNA techniques promise to provide access to all the genetic information in archaeological specimens, including the pathogens present at death. However, a myriad of difficulties (contamination, DNA sequence damage, background bacterial diversity) have limited progress, and the full extent of these problems is only just beginning to be appreciated. It is important that archaeologists and paleopathologists are fully aware of both the potential benefits and pitfalls of ancient genetic work, in order to interpret ancient DNA publications from an informed position. I will discuss several recent studies at the Ancient Biomolecules Centre including work on *Yersinia pestis*, *Mycobacterium tuberculosis*, oral microbes, and nematodes that illustrate these problems, and the possible solutions currently under investigation. Future projects will also be outlined, and I will be interested to learn about other potentially suitable samples.

Keywords: Ancient DNA, *Mycobacterium tuberculosis*, *Yersinia pestis*

A CASE OF A SEVERE VENOUS PATHOLOGY AS A BRIDGE BETWEEN FORENSIC ANTHROPOLOGY AND ANTHROPOLOGY OF PAST POPULATIONS

Cordeiro, C.¹; Pinheiro, J.¹; Cunha, E.²; Martin-Dupont, S.³; Vieira, D.¹

¹ Instituto Nacional de Medicina Legal, Coimbra, PORTUGAL

² Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

³ Laboratoire de Médecine Légale, Faculté de Médecine de Limoges, FRANCE

criscord@sapo.pt

A fairly preserved and complete skeleton of a female individual aged 70 y.o., was submitted to a forensic anthropology expertise during a forensic autopsy in the National Institute of Forensic Medicine in Portugal. Though age at death and sex were achieved, they were not enough for positive identification. For that purposes the severe and extensive lesions affecting both lower legs were crucial. We here describe the lesions and present the differential diagnosis. The pathological findings were in agreement with a venous chronic insufficiency, which the family described, she had. Varicose ulcers were also reported, which presence was suggested by the ties found in both legs, during the autopsy. Skeletal manifestations on tibiae and fibulae were very similar to the ones presented by a male skeleton, from the Coimbra Identified Skeletal Collection, in the same bones. We hypothesize that the same pathology is underneath them and discuss both the benefits of bone pathology for positive identification as well as the usefulness of forensic anthropology to the diagnostic of diseases in past populations. We emphasize the great advantage of a pluridisciplinary investigation of these cases, which teams must include obligatory both forensic pathologists and forensic anthropologists.

Keywords: Forensic anthropology, Venous pathology, Autopsy

POSTER

ARCHAEOLOGICAL CONTEXT OF THE DOS CABEZAS GIANTS

Cordy-Collins, A.

University of San Diego, USA

alanacc@sandiego.edu

Excavations at the Moche archaeological site known as Dos Cabezas (ca. 450 C.E.) have revealed the first reported cases of gigantism from prehistoric Peru. Five young elite males exhibit a series of skeletal abnormalities - some shared, others unique - that appear to be linked to their significantly above-average stature. This paper provides the archaeological background for the other papers in this symposium.

Keywords: Giants, Peru, Archaeology

PALEOPATHOLOGICAL ANALYSES OF THE MOCHE “GIANTS” FROM PREHISTORIC PERU

Cordy-Collins, A.

University of San Diego, USA

alanacc@sandiego.edu

Between 1977 and 2000, the skeletal remains of 5 young elite males were found in excavations at the archaeological site of Dos Cabezas, Peru. All were pathological in many respects, but most specifically in the size, weight, and length of their bones. Members of the Moche culture, whose deaths occurred ca. 450 C.E., they are all abnormally tall, with thinned cortex and reduced trabeculae. The papers in this symposium address some of the pathologies, their possible causes, and explore related conditions.

POSTERIOR PARIETAL THINNING: FIVE MOCHE GIANTS FROM PREHISTORIC PERU

Cordy-Collins, A.

University of San Diego, USA

alanacc@sandiego.edu

The first reported cases of gigantism from prehistoric Peru are five young elite Moche males excavated at Dos Cabezas, 1997-2000. Four of the five were contemporaries, the fifth a recent ancestor. All exhibit skeletal abnormalities-some shared, others unique-that appear to be linked to their significantly above-average stature. Normal height for Moche males of the 5th-8th centuries AD was 148.2-168.2 cm. The adult giants, age 18-22 years, stood 175-180 cm, the sub-adult, age ca. 15 years, stood 165.5 cm. Not only does it appear that all five individuals suffered from excessive skeletal growth, but from accelerated ageing, as well. All cranial sutures show evidence of arrested craniosyntosis, especially scaphocephaly. Furthermore, all endocrania evidence a reduced inner table with areas of erosion and thinned meningeal grooves. An especially notable and unusual cranial feature is posterior parietal thinning, often thought to be characteristic of advanced age. The condition is pronounced bilaterally in Giants 1, 2, and 5, just detectable bilaterally in Giant 3, and only visible unilaterally (left) in the sub-adult Giant 4.

Keywords: Peru, Giant, Parietal thinning

CASE REPORT OF A SKULL WITH MULTIPLE MYELOMA FROM A PORTUGUESE MEDIEVAL POPULATION (ESTREMOZ)

Costa, C.¹; Santos, S.¹; Fernandes, T.¹; Almeida, P.¹

¹ Biological Anthropology Laboratory, Department of Biology, Évora University, PORTUGAL
catacosta@hotmail.com

A skull from an adult skeleton exhumed from a Portuguese medieval (from the early XIV century) cemetery (Estremoz - south of Portugal) exhibit several circular areas of bone destruction in the inner table, which seem to be a case of multiple myeloma. Radiographic analyses are used in the diagnostic of this pathological condition.

Keywords: Medieval, Myeloma, Cranium

POSTER

A RARE CASE OF SKELETAL DYSPLASIA FROM IÇARA (SANTA CATARINA, BRAZIL) FROM 1000 BP

Cunha, E.¹; Krever, M. L.²; Scmitz, P.²

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

² Instituto Anchietano de Pesquisa, Rio Sul, BRAZIL

cunhae@ci.uc.pt

A very complete and well preserved human skeleton recovered from the Brazilian site of Içara (Santa Catarina) and dated, approximately to 1000 BP, exhibits a conjunction of lesions related to a severe and rare skeletal dysplasia. Due to its provenance and chronology, the case acquires more relevance, which justifies a detailed discussion. It concerns a male individual who probably died during his early forties presenting agenesis and hypoplasias of several bones. In the upper limb, the left radius is absent while the ulna is malformed, namely thickened and bowed. At least the thumb bone on the radial side is also absent, besides other malformations of the hand bones. The symmetric hand presents at least two deformed bones. In the lower limbs, several striking lesions can be detected, namely a proximal left femoral focal deficiency with prominent coxa vara and severe acetabular anomalies. There is no congenital absence of patella, however the right one is severely atrophied. The two tibiae and fibulae are symmetric in length with the right one, once again, being hypoplastic. Foot bones are also affected by congenital malformation compatible to club foot. In all, the skeleton displays lesions compatible to club hand and club foot, which are reported to be rare. The survival of this individual until his forties provides a perspective on the way that the society was organised.

Keywords: Dysplasia, Brazil, Club foot/hand

POSTER

HYPOPLASIAS IN FOSSIL HOMINIDS FROM THE MIDDLE PLEISTOCENE OF ATAPUERCA

Cunha, E.¹; Ramirez, R.²; Bermudez de Castro, J.³; Martinon-Torres, M.³; Wasterlain, S.¹; Sarmiento, S.³

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

² UPR 2147 CNRS, Dynamique de l'évolution humaine, Paris, FRANCE

³ Departamento de Paleobiología, Museo Nacional de Ciencias Naturales, Madrid, SPAIN

cunhae@ci.uc.pt

We present the prevalence of linear enamel hypoplasias (LEH) in the hominid dental sample from the Sima de los Huesos - a Middle Pleistocene site located in Atapuerca (Spain). The sample comprises of 467 permanent and 8 deciduous teeth. A total of 475 teeth belonging to a minimum of 28 individuals were analyzed. Hypoplasias are recorded in 7 individuals and 6 isolated teeth. The hypoplasias age of occurrence is determined by the number of perikymata between the hypoplastic line and the cervix. A periodicity of 9 days for these incremental lines is assumed. Results are compared with previous works on enamel hypoplasias on fossil hominins. The possible causes of hypoplasias in Sima de los Huesos hominid teeth are considered.

Keywords: Enamel hypoplasias, Atapuerca, Middle Pleistocene

ORAL

NEUROSURGERY 7000 YEARS AGO IN CENTRAL ITALY

D'Anastasio, R.¹; Michetti, E.¹; Pierfelice, L.¹; Capasso, L.¹

¹ Museo di Storia delle Scienze Biomediche, Università "D'Annunzio", Campus Universitario
 "Madonna delle Piane", Chieti, ITALIA
 mssb@unich.it

The authors describe a partial skull (Catignano, central Italy, 7000 B.P.) that belonged to a mature female, and presents deep, extended remodelling of the cranial vault. The lesions are two large funnel-shaped depressions: one on the top of the interparietal suture, and the second near the centre of the left parietal; both depressions have small holes that completely cross the braincase at their bottoms. We have no doubts about the artificial origins of these lesions. Macroscopic, microscopic and radiographic analyses reveal close analogies with lesions characteristic of scalping, performed with a rough lancet, probably a stone knife. The margins of the lesions are irregular, and tiny buttons of new-formed bone due to the post-surgical activities of small incompletely removed periostium fragments occur in several small areas over the bottoms of both lesions. Radiographs reveal a line of increased bone density in the left side of frontal bone, which probably corresponds with a healed, well cicatrised fracture. Therefore, though the surgery may have been performed for ritual reasons, we can also speculate that it was related to this healed frontal fracture. It is possible that the Catignano female had suffered complex braincase traumatism with multiple fractures of the cranial vault. Surgical treatment was circumscribed to the two parietal fractures, which were probably depressed, and was not extended to the frontal bone. Comparing the degree of resorption and new bone formation with standards obtained through experimental trepanations, we can estimate that the subject survived at least one year after treatment.

Keywords: Cranial trepanation, Neurosurgery, Central Italy

ORAL

THE PREVIOUSLY UNRECOGNIZED POSTERIOR DEEP TEMPORAL NERVE GROOVE ON THE CRANIAL BASE

Dias, G.¹; Dennison, K.¹; Premachandra, I.²

¹ Department of Anatomy and Structural Biology, University of Otago, Dunedin, NEW ZEALAND

² Department of Finance and Quantitative Analysis, University of Otago, Dunedin, NEW ZEALAND

george.dias@stonebow.otago.ac.nz

A groove was observed in the infratemporal fossa region of the cranial base, passing laterally from the foramen ovale onto the squamous temporal bone. We could not find any description of this groove in the literature. It is hypothesized that, due to its location, the groove is formed by the posterior deep temporal nerve. A study of the extent of this groove in 50 precontact New Zealand Maori adults (28 males, 22 females), 41 precontact Chatham Island Moriori adults (27 males, 14 females), and 32 modern Indian adults (12 males, 20 females) showed that there was a very high prevalence of the groove in the Indian crania but much less so in either of the two Polynesian samples. In none of the groups studied was there any evidence of selective preference for the presence of the groove on one or other sides of the cranial base. The evidence that the presence of the groove appears to be strongly dependent on the ethnic group being studied may make it a useful non-metric trait.

Keywords: Groove, Infratemporal fossa, Posterior deep temporal nerve

ORAL

ARE THEY CLOSELY RELATED - aDNA ANALYSES ON SEVERAL INDIVIDUALS FROM TWO MEDIEVAL POPULATIONS (BARTRINGEN, LUXEMBOURG) AND ARLON (BELGIUM)

Diegmann, J.¹; Joos, H.²; Kreutz, K.¹

¹ Department of Anthropology, University of Giessen, GERMANY

² Department of Human Genetics, University of Giessen, GERMANY

juliadiegmann@hotmail.com

The cemetery of Bartringen (Frankonia, Luxembourg) is archaeologically dated to the 6th century AD. The excavation started 1997 and ended in 2002. The cemetery consists of 13 graves with 12 individuals. The graves were full of very precious archaeological findings indicating the high social ranking of the individuals buried in them. The individuals are assumed to be aristocrats from medieval times, proven by the above mentioned archaeological findings and dating (determinations). It is, therefore, interesting to know if it is a cemetery for a family or closely related individuals, used by several generations. There is no clear evidence in the archaeological findings to answer this question. The situation is similar for the second population from Arlon (Belgium). For the examination the archaeologically determined aristocrats from the cemetery were selected to be genetically analysed. The aim of this study is to apply aDNA analyses, well known in palaeopathology and anthropology, to clear the kinship of the individuals from this frankonian aristocratic cemetery of Bartringen (Luxembourg) and the contemporary (gleichzeitig) population from Arlon (Belgium). The skeletons were also anthropologically examined for epigenetic traits to find some more hints. Preliminary results of the investigation will be shown.

Keywords: Anthropology, Human genetics, aDNA, Kinship, Skeleton, Medieval times

POSTER

ARCHAEOLOGY AND HISTORY OF HUMAN PATHOGENS: WHAT DO THE BONES TELL?

Dutour, O.

Université de la Méditerranée-CNRS, UMR 6578 Faculté de Médecine, Marseille, FRANCE

Analysis of ancient biological material (mainly represented by bones), discloses information on archaeology and history of disease without recourse to historical documents which, before the development of modern medicine, were poorly reliable. Since its infancy; palaeopathology took an interest in finding a trace of infectious diseases on ancient remains. Recently, advances in molecular biology techniques have created new and fascinating opportunities in human palaeopathology, especially in regard to infections, offering the unique opportunity to confirm the diagnosis of infections on ancient remains by authenticating the ancient DNA signature of human pathogens. Now, these techniques may be used in palaeopathology, either to confirm the diagnosis (especially in atypical forms), to resolve the question of some historical outbreaks (for instance such as plague, typhus or smallpox), or more recently, to develop a palaeoepidemiological approach. The phenomenon of re-emergence of some human infections, such as tuberculosis, is presenting new challenges for microbiologists and physicians who have been led to understand their present-day evolution over a longer time scale. In this perspective, old bones will continue to tell us new tales about the past of human pathogens.

HYPOPLASTIC LINES IN A PORTUGUESE MEDIEVAL POPULATION (SANTIAGO DO CACÉM)

Fernandes, T.¹; Granja, R.¹

¹ Biological Anthropology Laboratory, Department of Biology, Évora University, PORTUGAL
tmf@uevora.pt

A large number of hypoplastic lines were observed in a medieval population from Southwest Portugal (Santiago do Cacém). Here we present the location as well as the degree of incidence of these dental enamel defects. Moreover, we propose a set up of the correlation with some injury indicators.

Keywords: Hypoplastic lines, Portuguese medieval population, Injury

ANALYSIS OF TWO CALCIFIED PLEURAL PLAQUES FROM A MEDIEVAL PORTUGUESE POPULATION

Fernandes, T.¹; Granja, R.¹; Thillaud, P.²

¹ Biological Anthropology Laboratory, Department of Biology, Évora University, PORTUGAL

² Saint-Cloud, FRANCE

tmf@uevora.pt

Two pathological soft tissue calcifications were observed in an adult male skeleton, excavated from a medieval cemetery in the south of Portugal (Flor da Rosa). Submitting these two calcified pleural plaques to a spectrographic analysis, 30% of Carapatite were detected. This result indicates an infectious origin of the mentioned plaques.

Keywords: Pleural plaques, Calcified soft tissues, Infectious disease, Medieval Portuguese populations

POSTER

ABOUT SOME CASES OF TUBERCULOSIS OF THE PATHOLOGY MUSEUM IN TURINFerrari, L.¹; Micalizio, S.¹¹ Department of Biomedical Sciences and Human Oncology, University of Turin, ITALY
ferrari.micalizio@libero.it

The report of tuberculosis in Pathology Museum's specimens isn't exceptional, due to the frequency of this disease in the past. It is quite rare, in opposite, the variety of specimens originally diagnosed as "tuberculosis" belonging to Pathology Museum of the University of Turin. Furthermore, some of these specimens (pericarditis, lymphadenitis and tuberculosis of the lung) have been studied with modern techniques, such as PCR, and also with traditional techniques, such as histological staining. In particular, the traditional staining yielded the best results, showing the perfect preservation of the histological details after more than a century.

Keywords: Tuberculosis, Pathology museum, Histology, PCR

A SCURVY CASE IN A YOUNG CHILD FROM MONTE DA CEGONHA (VIDIGUEIRA - PORTUGAL)

Ferreira, M.T.

Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

teresasferreira@yahoo.com

Monte da Cegonha is a roman *villa* in Vidigueira, south of Portugal, built in the first quarter of 1st century and preserved until the 12th century. Inside a basilica from the 4th century, probably one of the first Christian churches in Iberia Pensinsula some human burials were found. One of them, exhumed in 1986 is here reported. It concerns an almost complete and well preserved skeleton of a very young child. A series of porotic injuries affecting the skull and the postcranial bones are the most striking evidences since the distribution pattern recalls scurvy. Even when differential diagnosis is done, which is here discussed, scurvy remains the most probable aetiology.

Keywords: Non-adult, Scurvy

POSTER

A CASE OF OSTEOMYELITIS IN THE HIP OF A MEDIEVAL PORTUGUESE MALE SKELETON

Ferreira, M.T.¹; Silva, A.M.¹

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL
teresasferreira@yahoo.com

In the summer of 2001 during an emergency excavation near S. Cristovão Church (old part of Coimbra) several skeletons were recovered. One of them, an adult male skeleton, exhumed from a stone sepulture dated to 1030 ± 100 BP (2 sigma: cal AD 780 - 1220, Beta - 158253), presented several pathologies. The more striking one is visible in the hip. In this articulation, the pathological findings in the femoral head and the acetabulum include extensive bone destruction and reactive new bone formation, involving an irregular surface with pitting and cavities. In the acetabulum a small cloacae is visible. The condition described corresponds to a case of osteomyelitis, probably consequence of a previous traumatic event on the femur's neck.

Keywords: Male skeleton, Osteomyelitis, Femoral neck fracture

PALEOPATHOLOGICAL PROFILES OF THE HUMAN POPULATION BURIED AT PERDIGÕES (REGUENGOS DE MONSARAZ)

Figueiredo, A.¹; Duarte, C.²; Pinheiro, V.²; Lago, M.³; Valera, A.³

¹ Institute of Archaeology, University College of London, UK

² Instituto Português de Arqueologia, PORTUGAL

³ Era Arqueologia, Lisboa, PORTUGAL

alvaro_figueired@hotmail.com

The Chalcolithic site of Perdigões (Reguengos de Monsaraz) is an extensive circular-shaped settlement surrounded by ditches. Intensive surface surveying together with the excavation of a few test pits revealed the existence of a necropolis containing several tombs, and structurally integrated within the settlement area. The complete excavation of one of the tombs and the ongoing excavation of a second, revealed their collective nature and the exclusive form of secondary burial practised by the site's inhabitants of a long period of time. In the context of the present study, results of the analysis of oral pathology (carious lesions, periodontal disease, trauma, linear enamel hypoplasia, and bone pathology) will be presented. Their sex and age distribution will be discussed in the context of the wider paleoepidemiology of Chalcolithic Iberian populations.

Keywords: Dental pathology, Chalcolithic, Portugal

ORAL

THE LISBON MUMMY PROJECT

Figueiredo, A.¹; Lago, M.²; Duarte, C.³; Filer, J.⁴; Ikram, S.⁵; Owens, L.¹

¹ Institute of Archaeology, University College of London, UK

² Era Arqueologia, Lisboa, PORTUGAL

³ Instituto Português de Arqueologia, PORTUGAL

⁴ British Museum, London, UK

⁵ The American University in Cairo, EGYPT

a.figueiredo@ucl.ac.uk

The Lisbon Mummy Project will comprise an international team of specialists who will conduct a biological study of the mummified human and animal remains belonging to the Egyptology Collection of the Museu Nacional de Arqueologia, in Lisbon. The team's work will focus on the mummy of Irtieru, a beautifully decorated cartonnage mummy of 3rd Intermediate Period date, and on a wrapped unidentified individual from the Ptolemaic Period. In the collection there are also four crocodile and two bird mummies, one still sealed inside its pottery coffin, which will be studied. Research procedures will employ non-destructive methods of analysis that will allow access to the interior of the mummies without the need to unwrap or damage them. These methods will include conventional flat plate radiography, computed tomography, and endoscopic examination. Histological and genetic analyses will also be carried out on tissue samples taken from the Ptolemaic specimen. The project will bring together a multidisciplinary team from various institutions, including the Museu Nacional de Arqueologia (Lisbon), University College of London, The American University in Cairo, Instituto Português de Arqueologia and ERA Arqueologia (Lisbon).

Keywords: Bioarchaeology, Mummification, Egyptology

ORAL

HUMAN PAPILLOMA VIRUS (HPV) IN A 16TH CENTURY ITALIAN MUMMY

Fornaciari, G.¹; Zavaglia, K.; Giusti, L.¹; Ciranni, R.; Marchetti, I.; Bertacca, G.

¹ Dep. of Oncology, Section of Palaeopathology, University of Pisa, ITALY
g.fornaciari@med.unipi.it

A study of the artificial mummy of Maria d’Aragona (1503-1568), a noblewoman of the Italian Renaissance famed for her beauty, revealed venereal syphilis with well preserved treponemes (Fornaciari et al, 1989). Further examination of the mummy showed a large pedunculata arborescent neof ormation (2x7 mm) of the right inguinal region, which was rehydrated and submitted to histology by hematoxylin-eosin, Van Gieson and Masson’s trichromic staining. Light microscopy evidenced an exophytic, papillary skin lesion, with typical connective axis and pronounced parakeratosis. These macroscopic and histological aspects seemed peculiar of condyloma acuminatum, a papilloma virus-induced squamous lesion also called “venereal wart”. In order to detect the presence of HPV (*Human papillomavirus*) nucleic acid, DNA extracted from a single 5µm paraffin-embedded section was amplified with L1 consensus primers GP5+/GP6+, promoting the amplification of a 141-151 bp sequence from 25 distinct genital HPVs. The amplified DNA fragment was utilized both for cloning and direct genotyping with probes for HPV 6, 11, 16, 18, 31 and 33. The hybridization method revealed the presence of HPV 18, a virus with high oncogenic potential. Automated sequencing of several clones revealed 100% similarity sequences of both HPV 18 and JC9813 DNA, a putative novel HPV with low oncogenic potential. This study represents the first molecular diagnosis of HPV in mummies and could pave the way for further research about the secular evolution of these viruses, very important in human oncology.

Reference:

Fornaciari, G; Castagna, M; Tognetti, A; Tornaboni, D; Bruno, J. (1989). Syphilis in a Renaissance Italian Mummy. *Lancet*, 8663: 614.

Keywords: Condyloma, DNA, Virus, HPV, Mummy, Renaissance

ORAL

THE USE OF PALEOPATHOLOGY TECHNIQUES ON THE STUDY OF SKELETAL CHANGES IN MARINE TUCUXI DOLPHIN *SOTALIA FLUVIATILIS* (CETACEA, DELPHINIDAE) OF RIO DE JANEIRO COAST, BRAZIL

Fragoso, A.¹; Souza, S.²; Oliveira, L.³

¹ Antropologia Biológica - Museu Nacional/ UFRJ, Rio de Janeiro, BRAZIL

² Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, BRAZIL

³ Museu Nacional, Rio de Janeiro, BRAZIL

bernafragoso@openlink.com.br

The osteological information about *Sotalia fluviatilis*, the tucuxi dolphin, is very limited. To increase our knowledge about bony changes in this species, a study was conducted on 75 specimens from the Rio de Janeiro coast. The material consisted of skeletal remains stored in institutional collections. This research had the objective of identifying bony changes and recording their frequency by sex, age, size, physical maturity, vertebral column region, and individual localities. The bones were measured and examined to identify the presence, localization and development degrees of morphological and pathological changes. The lesions were classified into traumatic, degenerative, infectious and developmental categories. Most of the specimens (77.3%) had some sort of lesion of traumatic (n=47), degenerative (n=25), infectious (n=24) or developmental (n=22) origin. A reduced number of specimens (n=4) showed lesions in all categories. The most affected region of vertebral column were the cervical and thoracic. In general, the number of lesions and the affected bones tended to increase with age of the specimens and with individual size. The number of affected bones was similar between the sexes. Individuals from the central area of Rio de Janeiro state had a higher prevalence of lesions and of bone affected by changes. The study of bony changes is an important tool for collecting pathological information from dolphins. The frequency of occurrence of morphological and pathological changes in this species could be associated with particularities for the region, the form of natural resources used, and other interference occasioned by human activity.

Keywords: Animal pathology, Mammals, Dolphin pathology

POSTER

PALEOPATHOLOGY AND TRACE ELEMENTS IN THE FRANCOLÍ NECROPOLIS (TARRAGONA, SPAIN, III - V CENTURY A.C)

Garcia, E.^{1,2}; Berrocal, M.^{1,2}; Baxarias, J.²; Campillo, D.²; Subirá, M.^{1,2}

¹ Unitat d'Antropologia, Departament de Biologia Animal, Biologia Vegetal i Ecologia, Facultat de Ciències de la Universitat Autònoma de Barcelona, SPAIN

² Museu d'Arqueologia de Catalunya, Barcelona, SPAIN

elena.garciag@campus.uab.es

The Late Roman sites of "Prat de la Riba" and "Quintá de Sant Rafael" in Tarragona (Spain) are included into the vast urban necropolis located near Francolí river, in the ancient city of Tarraco. The chronology of these sites was determined from the amphoric typology and include from third century to fifth century a.C. More than 330 inhumations were recovered from both archaeological sites. This sample is representative from the total Francolí necropolis, being well represented sexes, different age groups and social status. A complete anthropometric, demographic, nutritional and paleopathological studies was previously performed for the sample. The main goal of this study is to relate the concentration of trace elements in bones (Ca, Ba, Mg, Sr, Zn and Cu) with some pathologies like dental hypoplasia, porotic hyperostosis, presence of cribra orbitalia and metabolic osteopaties.

Keywords: Trace elements, Paleopathology, Late Roman period, Tarragona

ORAL

A POSSIBLE CASE OF LEPROSY IN PREHISTORIC NEW ZEALAND MAORI

George, A.

University of Otago, Dunedin, NEW ZEALAND

geoam492@student.otago.ac.nz

New Zealand has long drawn anthropological interest as the last large landmass settled by humans - the first arrivals having voyaged from East Polynesia as recently as 1200 AD. Despite this interest, biological anthropology has made only minor contributions to our knowledge of pre-European health and disease amongst the indigenous Maori and Moriori. The relatively few studies addressing disease remain problematic due to the nature of the data and limited research interests. Because of the paucity of skeletal analyses, many studies have drawn upon other archaeological evidence and suppositions derived from disease aetiology. Despite these problems scholars since the 1970's have continued to cite claims that certain diseases did not, or never could have existed in prehistoric New Zealand. Such statements have been accepted as fact and have never been re-examined. One such condition is leprosy, widely reported as having been absent in New Zealand, regardless of suggestions of its existence made by observers prior to the 1970's. Writings of early explorers, settlers and medical practitioners, frequently discuss a pre-European 'Maori form' of leprosy and this is supported by linguistic evidence. This poster presents the case of a near-complete skeleton of a young adult female excavated in the Cavalli Islands off the north-east coast of New Zealand's North Island. Dated to around 1600 AD, this individual shows considerable pathological change with a differential diagnosis including leprosy. The implications of this evidence will be discussed in terms of prehistoric population health and disease, and possible interpretations of New Zealand prehistory.

Keywords: Leprosy, New Zealand Maori, Prehistory, Palaeopathology

POSTER

PALYNOLOGICAL INVESTIGATION OF THE DOS CABEZAS GIANTS

Geyer, P.¹; Larson, T.; Stroik, L.

¹ University of San Diego, USA
psgeyer@hotmail.com

Beginning in 1999, coprolite and control soil and samples were collected from the skeletal remains of Moche Giants excavated at the archaeological site of Dos Cabezas, northern Peru. In 2000, a pilot palynological study was undertaken to ascertain if pollen was recoverable from them. The results of this study netted a spectrum of sixteen pollen types that can be placed in our preliminary categories: known foods, ethnobotanically known herbal medicines, background pollens, and possible fish poisons. The results of this preliminary study encouraged the study team to continue the archaeological laboratory research. It was decided to sample as many of the excavated skeletal remains from the Giants' tombs as possible. Following the 2001 field season, the left pelvises of the two Giants excavated in 1997 and 1998 were subjected to a controlled wash. In addition, a full palynological study was performed on the three individuals (one adult Giant and two children) recovered in 1999. Pollen was extracted and analyzed. The results of the combined study are significant, and are reported in this paper.

Keywords: Peru giants, Palynological, Pollen

MUMMIES AND TATTOOS: AN EXPLORATION

Gill-Robinson, H.

Department of Anthropology, University of Manitoba, CANADA

hgrobison@mts.net

Soft tissue preservation of human remains occurs as a result of one of three circumstances: spontaneous mummification through environmental mummification; anthropogenic mummification through the actions of human cultures and a combination of these two events. Tattoos have been found on well-preserved human remains from throughout the world. More than thirty mummies have identified body marking in the form of tattoos, not all of which are visible to the naked eye. The images displayed in these tattoos range from simple lines and crosses to elaborate designs with specific meanings. Early analysis of the tattoos on mummies relied upon the visual recording of these images and occasional attempts to interpret the images through known iconography. Recent technological advances are now allowing new analysis and interpretations of the tattoos found on mummified human remains. The number of mummies with tattoos may actually be higher and, where possible, infrared photography may aid in the identification of tattoos on mummified human remains. This paper is an exploration of those mummies with identified tattoos and a consideration of the methods used to identify and interpret tattoos on mummified human remains.

Keywords: Mummies, Tattoos, Photography

ORAL

WEST AFRICAN TREPHINATION: SKELETAL REMAINS FROM THE TORA SIRA TOMO SETTLEMENT COMPLEX IN BURKINA FASO

Gjerdrum, T.¹; Holl, A.²; Maes, K.³; Walker, P.³

¹ Department of Orthopaedics, Marian Medical Center, Santa Maria, USA

² Department of Anthropology, University of Michigan, USA

³ Department of Anthropology, University of California, Santa Barbara, USA

thrgjrdm@aol.com

The cranium of a burial discovered in the Tora Sira Tomo settlement complex, located approximately seven kilometers south of the Mouhoun River (formerly known as the Black Volta), shows two loci of perimortem modification. One of these is on the frontal near the coronal suture and the other on the left parietal in the area between the squamous and lambdoidal sutures. In both areas the outer table has been scraped away to expose oval areas of diploë. These defects are 3-5cm in diameter and show tool marks at their periphery. The lack of evidence of healing suggests that these modifications were made around the time of death. The cranium also has a roughly circular, 2cm in diameter defect in the occipital bone with smooth margins and significant evidence of healing on both the ectocranial and endocranial surfaces. Although this burial has not yet been securely dated, archaeological work suggests that Tora Sira Tomo settlement complex was occupied from about 700 BC to AD 1600. This specimen is significant because very little evidence of trephination has previously been available for sub-Saharan West Africa.

Keywords: Trephination, Prehistoric, West Africa

POSTER

PALEOPATHOLOGICAL EVIDENCE FOR DRAUGHT CATTLE

Groot, M.

Winchester, Hampshire, UK

mg801@soton.ac.uk

Some of the cattle bones from a site in the Netherlands dating to the Roman period show pathological changes. These include osteoarthritic changes in the hip joint and metapodials. Several phalanges are affected as well. The hypothesis is that the lesions are a result of the use of cattle for traction. Results from this site will be compared to pathology of known draught cattle described in the literature.

Keywords: Cattle, Traction, Roman period, Osteoarthritis

ORAL

CRANIAL DEFORMATION AND EARLY SYNOSTOSIS IN PREHISTORIC COLLECTIONS IN THE SOUTH CENTRAL ANDES

Guillen, S.

Centro Mallqui, Lima, PERU

mallqui@amauta.rcp.net.pe

Pre-Hispanic Andean groups devoted great interest in modifying the shape of the skull. The reasons why it was done, when the practice started, and how the practice spread are still unclear. This paper presents data to discuss these topics along with the typologies that have been proposed to make systematic observations on the recurrence of this cultural modification. Premature cranial synostosis is discussed in relation to some types of cranial deformation, and as a cause of death of some young individuals. Furthermore, the impact of cranial binding which did not turn into early closure of sutures left scarring in the bones. These scars caused by the deformation procedure have obscured paleopathological observations and analysis of Andean early populations. The discussion involves the use of macroscopic and radiological observations.

Keywords: Cranial deformation, Early synostosis, Andes

ORAL

ENDOSCOPIC EXAMINATIONS OF THE PARANASAL SINUSES AND THE MIDDLE EAR IN ANCIENT EGYPTIAN MUMMIES

Hagedorn, H.¹; Zink, A.²; Nerlich, A.²

¹ Department of ENT – Diseases, Ludwig-Maximilians-University of Munich, GERMANY

² Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

i.h.hagedorn@t-online.de

During several recent excavation campaigns at the necropolis of Sheikh-Abd-el-Gurna, Thebes-West, Upper Egypt, we investigated the human remains of three “tombs of the nobles” totalling at least 273 individuals. Besides the macroscopic examination we used endoscopes for the inspection of the nasal cavity and the ear. In this population a high rate of ENT related pathological lesions was seen. Thus, dental conditions generally were poor with a high degree of dental abrasion. Besides these dental findings we observed several pathological processes such as nasal septal deviation leading to a nasal obstruction. Similarly, several cases presented with concha bullosa (in about 10%). During the endoscopic examination of the maxillary sinus in several cases we found a circumscribed osteolytic destruction of the floor of the sinus with an irregular marginal new bone formation. Since in those cases adjacent apical dental processes had to be recorded the sinus affection can be regarded as secondary inflammation. But also other reactive osteoplasia were recorded, providing signs for a chronic sinusitis. In 3 % of the analysed mummies we found osteomas in the paranasal sinuses. In our study population several observations indicated the presence of chronic inflammatory processes of the middle ear. Likewise, in 9% of the cases we observed a strong and irregular superficial sclerosis of the promontory region. As a further particular form of a chronic inflammatory process of the middle ear a cholesteatoma may develop. Up to now, we observed one very typical case in a middle-aged male mummy. In summary, we provide circumstantial evidence that a careful macroscopic and endoscopic investigation of mummy skulls may provide significant information on distinct palaeopathological diseases of the head and neck region.

Keywords: Endoscopic, Chronic sinusitis, Chronic otitis

POSTER

RIB TRAUMA IN A MOCHE GIANT

Heflin, T.

San Diego Museum of Man, San Diego, USA

theflin@sandiego.edu

The skeleton of a young adult male showing multiple rib fractures was recovered from the site of Dos Cabezas in Jequetepeque, Peru. This individual, affectionately nicknamed "Rambo," was the first of several Moche giants to be found at Dos Cabezas. Rambo was 177 cm in stature; 10.5% taller than the average Moche individual. Radiographic analysis of the ribs indicates that Rambo suffered from some type of bone loss syndrome; however, the ribs display evidence of healing as indicated by callus formation. Therefore, his condition did not hinder the production of new bone around the fractures. Possible reasons surrounding the high prevalence of rib fractures include weakened cortical bone due to rapid growth (as evidenced by Rambo's height), or a type of bone loss syndrome.

Keywords: Paleopathology, Ribs, Fractures, Moche

MENDICANT AND ILL. INDIVIDUAL N. 14 FROM THE EL BURGO DE OSMA CATHEDRAL CLOISTER'S NECROPOLIS

Herrerín, J.¹; Garralda, M.¹

¹ U. D. Antropología, Fc. de Biología, Univ. Complutense de Madrid, SPAIN
jherrerri@olmo.pntic.mec.es

The necropolis discovered in the Cloister of the El Burgo de Osma Cathedral (Soria, Northern Spain) consists of a group of 63 burials, with a total of 75 individuals, 55 adults, 4 juveniles and 16 children. Historical documents dating from the time when this necropolis was used (in the XVIIth and XVIIIth c.) point to this area as a cemetery for "...poor mendicants...". The study of the pathologies of this human group corroborates these data, since some are very dramatic, as proved by the fact that several of the individuals suffered from a loss of movement preventing them from carrying out any physical work. Described in the present paper is the case of an adult female that suffered congenital double hip dislocation and Pott's disease.

Keywords: Modern Era, Spain, El Burgo de Osma, Female, Double hip luxation, Pott's disease

ORAL

MUMMIES IN MANITOBA (CANADA)? INITIAL REPORT ON THE REMAINS OF TWO PARTIALLY MUMMIFIED SUB-ADULTS FROM WESTERN MANITOBA

Hewitt, B.

University of Manitoba, CANADA

barbhewitt@hotmail.com

No one thinks of Manitoba when they think of the number of places in the world where mummies are found. However, recently two partially mummified bodies were returned to the province, and brought to the Department of Anthropology at the University of Manitoba for examination. Both had been excavated from sites in Manitoba over the years, one in the 1930's, and the other in the late 1960's. By a stroke of extraordinary luck, large portions of the upper bodies of these two subadults retain soft tissue. Skin, hair, textiles and several types of beads are all well preserved. The distinctive silversmith marks on the silver jewelry they wore allow us to situate these burials firmly within the middle of the Fur Trade Period in Central Canada. Equally remarkable are the similarities between the burials, the artifacts recovered from each, and the individuals themselves. This report will present initial forensic findings for both of these individuals, as well as a discussion of two other, possibly related individuals recovered nearby with strikingly similar artifact assemblages and items of adornment.

Keywords: Mummy, Manitoba, Paleopathology, Osteology

ORAL

METACARPAL RADIOGRAMMETRY AND AGE-RELATED CORTICAL BONE LOSS IN POST-MEDIEVAL LONDON COLLECTIONS

Ives, R.

University of Birmingham, ENGLAND

Rachel@RAIves.freemove.co.uk

Osteoporosis is a metabolic disease whereby exaggerated rates of bone loss result in low bone density, which may leave an individual susceptible to fracture. The aetiology of osteoporosis is complex and diagnosis of the condition in archaeological human bone is difficult. However, measurement of the total width and medullary width from radiographs of the second metacarpal (metacarpal radiogrammetry) enables the calculation of the amount of cortical bone (Dequeker, 1976; Mays, 2000). The technique of metacarpal radiogrammetry is not destructive and therefore has value when applied to archaeological human remains. This paper will consider the analysis of the amount of cortical bone and the pattern of age-related cortical bone loss in males and females from two post-medieval collections from London. The individuals studied had less cortical bone when compared with modern data. Probable explanations for this include the effects of poor nutrition and detrimental living conditions on bone growth. The smaller amount of cortical bone combined with the observed bone loss with age, suggest that these individuals were at risk of sustaining osteoporosis and related fractures earlier than is seen in modern societies.

References:

- Dequeker, J. (1976). Quantitative Radiology: Radiogrammetry of Cortical Bone. *British Journal of Radiology*, 49: 912-920.
- Mays, S. (2000). Age-Dependent Cortical Bone Loss in Women from 18th and early 19th Century London. *American Journal of Physical Anthropology*, 112: 349-361.

Keywords: Age-related cortical bone loss, Osteoporosis

MAXILLARY SINUSITIS IN ANGLO-SAXON ENGLAND - A STUDY OF THREE POPULATIONS

Jakob, T.

Department of Archaeology, Durham, UK

betina.jakob@durham.ac.uk

Only a limited amount of research has been carried out on population-based studies of maxillary sinusitis possibly due to problems in access to sinuses in well-preserved skulls. For the present analysis a total number of 115 individuals (67 females, 53 males, 31 non-adults and 3 unsexed adult individuals) with at least one preserved maxillary sinus was examined macroscopically. The sample consists of skeletons from three English cemeteries dated to the early medieval period (5th-7th century AD). Bone changes such as remodelled spicules or pitting of the sinuses are found in 28 cases. The overall prevalence of 17.95% is significantly lower than the frequency seen in a large sample from south western Germany dating to the same period. Infection rates for both sexes are very similar in the English populations, while more females than males were affected in the German sample. Recent palaeopathological research indicates the importance of dental inflammation especially in elderly individuals as the main cause of maxillary sinusitis. This is equally found to be the case in the present study, although the correlation between advanced age and a higher prevalence of sinusitis in males is less strong than in females. Differences in prevalence between the sexes as well as between different age categories are discussed and compared to several other populations from rural and urban contexts to evaluate the possibility of maxillary sinus inflammation as an indicator of health status.

Keywords: Maxillary sinusitis

DISH INCIDENCE AND SOCIAL STATUS CORRELATIONS IN LITHUANIAN SKELETAL MATERIALS

Jankauskas, R.

Department of Anatomy, Histology and Anthropology, Vilnius University, LITHUANIA

rimantas.jankauskas@mf.vu.lt

There are indications in literature that Diffuse Idiopathic Skeletal Hyperostosis (DISH) is aetiologically linked with obesity and late onset (type II) diabetes. Thus its incidence could differ in stratified societies, where individuals had different access to food resources. DISH incidence was checked on a large (414 individuals) pooled skeletal sample from the Iron Age, Mediaeval and Early Modern periods. Complete skeletons of adults were chosen for analysis. Social status was defined either by grave inventory (Iron Age) or burial placement (church, urban or rural cemeteries). Anterior longitudinal ligament, extra-spinal ligament or entheses ossification were the diagnostic criteria for DISH. Total DISH incidence was 9,6%. No differences between the Iron Age, Mediaeval and Modern materials were found ($p > 0.05$). DISH had clear age affinity: 20-30 years - 0 from 97; 30-40 years - 3 from 103 (2.8%); 40-50 years - 23 from 122 (18.8%); 50+ years - 24 from 84 (28.6%) ($p < 0.01$). It was also closely associated with sex: females - 4 from 153 (2.6%), males - 47 from 260 (18.1%) ($p < 0.01$). Social status was slightly but significantly related with DISH: incidence among high status individuals was 19 from 70 (27.1%), average or urban - 21 from 177 (11.9%), poor or rural - 11 from 153 (7.2%) ($r = 0.194$, $p < 0.01$). This way our data support hypothesis that DISH incidence can be related with the way of life, especially nutrition.

Keywords: DISH, Epidemiology, Social status, Lithuania

ORAL

THE NECROPOLIS OF SANT PERE (TERRASSA - SPAIN): PALEOPATHOLOGICAL ANALYSIS

Jordana, X.¹; Isidro, A.³; Garcia, C.²; Malgosa, A.²

¹ Unitat d'Antropologia, Dep. BABVE, Universitat Autònoma de Barcelona, SPAIN

² Universitat Autònoma de Barcelona, SPAIN

³ Hospital del Sagrat Cor, Barcelona, SPAIN

Xavier.Jordana@uab.es

The city of Terrassa, located a few kilometres from Barcelona, has an important recent history as an industrial city, concretely in the textile industry. But the history of Terrassa goes back hundreds of years. It is possible to say that the city of Terrassa is the legitimate successor of the Roman city of Egara and the Visigothic Episcopal Seat. In VIIIth century the Muslim invasion that completely destroyed the Visigothic city of Egara and the Episcopal Seat took place. During a century this territory was practically uninhabited. In IX century the Franks, commanded by Carlomagno, arrived in Barcelona and reconquered all this territory from the Muslims. During the Reconquest the population of Terrassa moved to the area around the powerful Castle, the "Castrum Terracia", from which grew the medieval villa of Terrassa, direct predecessor of the present city. In this period, in the same location of the Episcopal Seat, a set of churches was constructed, which was known as the monumental assembly churches of Sant Pere that still stands until today. At this moment, an archaeological excavation in Sant Pere churches is being done with the main goal of reconstructing the space that delimited the old Visigothic Episcopal Seat. During the excavation a great deal of burials from different periods have been brought to light. Graves previous (late Roman period) and posterior to the creation of the Episcopal Seat were found, the cemetery being continuously used until the last century. The analysis of the skeletal remains from the oldest graves, that include the Roman and Visigothic Egara period until the Muslim invasion, has begun with the main purpose of carrying out a complete bioanthropological study. In this study we present the preliminary results of paleopathological analysis. The physical constitution of the individuals is in general robust and emphasizes the great amount of traumatic lesions such as fractures and enthesopaties, related to the type of physical activity.

Keywords: Necropolis, Paleopathology, Bioanthropological

POSTER

DENTAL PALEOPATHOLOGY IN A MEDIAEVAL SKELETAL SAMPLE: NECROPOLIS OF "EL BARREJO" (LEÓN, SPAIN)

Juan, J.¹; Caro, L.¹; López, B.¹; Sánchez, E.¹; Rodríguez, H.¹; Edo, M.¹

¹ Dpto. Biología Animal, Area de Antropología Física, Facultad de Biología, Universidad de León, Campus de Vegazana, León, SPAIN

jarajuan@terra.es

The aim of this study is to present and discuss the results of a research about paleopathological conditions in the dentition of a mediaeval skeletal sample (12th-13th centuries) from a mountainous and isolated place in León, NW of Spain. We used the diagnosis criteria and data analysis methods proposed by various authors in order to obtain a preliminary view of differences, in life conditions and/or health status, of this sample besides other mediaeval skeletal series. The sample comprises 378 permanent teeth, of 20 adult individuals, and it was examined for the following categories of dental condition: piece state (*in situ*, isolated, antemortem or postmortem loss), caries (degree and localization), hipoplastic defects (linear type in upper central incisors and lower canines), attrition (degree) and others (abscesses, periodontal defects...) The results of the prevalences of these dental diseases are compared with other skeletal series of similar chronological and geographical context improving our knowledge about mediaeval populations in the North of Spain.

Keywords: Dental, Paleopathology, Spain, Middle Age

POSTER

THE WENDORF SKELETAL COLLECTION AT THE BRITISH MUSEUM

Judd, M.

Department of Egypt & Sudan, The British Museum, London, ENGLAND
margaretjudd@hotmail.com

In 2001, Professor Fred Wendorf of Southern Methodist University donated over 6 million artefacts, collected during his years of research in the Nubian region of ancient Egypt and Sudan, to the British Museum. This collection arrived at the British Museum in Spring 2002 and consists of lithics, Wendorf's archives, and some of the world's oldest potsherd, but most importantly it contains a collection of skeletal remains from a 12,000 year old burial site, Site 117, more commonly referred to as Sahaba for nearby Jebel Sahaba. Not only is this skeletal collection significant for its age, but it also represents some of the earliest direct evidence of warfare. The collection, however, is not without problems and access for immediate research is impractical at this time. The purpose of this presentation is twofold: 1. to introduce bioarchaeologists to the site and to inform potential researchers of the demographic structure, elemental preservation, and research constraints of the skeletal collection that we hope will assist them in their research design and proposals. 2. to present some of the unexpected processing, inventory, and conservation issues that occur in the collection that limit the types of data collection possible at this time.

Keywords: Nubia, Sudan, Conservation, Warfare, Data collection

POSTER

TUBERCULOSIS IN HISTORICAL HUMAN CADAVERIC BONES (REMAINS)

Kanaan, A.¹; Sáez, A.¹; Sánchez, J.¹

¹ Departamento de Medicina Legal, Facultad de Medicina, Universidad Complutense de Madrid,
SPAIN

jsanchez@med.ucm.es

The study of skeletal remains, besides its anthropological interest indicating the point in time when death occurred and its cause. Anthropological forensic evaluation: the bones' aspect as well as the homogeneous fluorescence seen by ultraviolet light, suggest that these bones are approximately 100 years old. Considering the metrical and morphological studies and the dental evaluation, we deduce that these skeletal remains belong to a partial, 30-35 year old male, according to Todd's table. Multiple osteolytic lesions were present at different locations, especially on the dorsolumbar vertebral column, hips, knees, ankles and on the hands and feet bones. These multiple lesions present osteolytic formations without any sclerosis reaction and erosion mainly of the joint surfaces of the metatarsals and phalanges, destruction and reabsorption of the same bones without any regeneration. Ultraviolet fluorescent light was used to examine a humerus section, morphometrical, topographic and histological studies of bone lesions were made. From the somatometric study, it could be deduced that these bones might belong to a 30-35 year old male, 163 cm height. Because of the localisation and the morphology of these osteolytic lesions, it could be suggested that this may be a case of bone tuberculosis and could be presumed to be the cause of death. We are waiting for the results of the PCR (DNA study).

Keywords: Bone remains, Tuberculosis, Ultraviolet light, Osteolytic formations

POSTER

A SIXTEENTH CENTURY WARRIOR GRAVE FROM UPPSALA, SWEDEN

Kjellström, A.

Archaeosteological Research Laboratory, Stockholm University, SWEDEN

anna.kjellstrom@telia.com

In the fall of August 2001 archaeologists discovered and excavated a large pit with skeletal remains. The archaeological investigation could only examine a small part (8m²) of an apparently much larger grave. The carbon dating showed that the remains dated from 355±50 years BP, this means a calibrated dating of 1440 to 1650. Historical sources and the dating of the grave made it possible to link the remains to “Långfredagsslaget” (the battle of Good Friday), which took place in Uppsala the 6th of April AD 1520. The battle was fought between the Danish king Kristian’s troops and rebellions belonging to Sten Sture, the Swedish national administrator. The battle was fought both in and outside the gates of the town. Contemporary historical records claims that at least 2000 men were killed. It is not known were the fallen victims were buried. Even though the pit was small, it contained remains from at least 54 individuals. Both complete skeletons, parts of limbs i.e. articulated bones, and commingled skeletal elements were present. Some parts of the pit seemed to hold some kind of order, eg. the remains were laid down in some kind of order, crania in one part of the pit and articulated spines in another. Maybe the bodies of the victims were lying on the battlefield for some time before being buried which led to putrefaction and a partial skeletonization. This may have caused a mixture between both articulated and disarticulated bones. A large part of the skeletal material exhibit multiple signs of cut marks, the majority being found on the skulls. The distribution of the blade wounds showed that the largest part is located on the left side of the crania. The osteological investigation, which started January 2002, is still going on. The poster deals with the preliminary osteological results. A multi-disciplinary research project is planned in the near future.

Keywords: Warrior grave, Cut marks

POSTER

LITTLE LEAGUER'S ELBOW (MEDIAL EPICONDYLAR FRACTURES) IN THE ARCHAEOLOGICAL RECORD

Knüsel, C.¹; Boylston, A.¹

¹ Department of Archaeological Sciences, University of Bradford, West Yorkshire, UK
c.knusel@bradford.ac.uk

'Little Leaguer's Elbow', a partial or complete avulsion fracture of the medial epicondylar epiphysis of the humerus, occurs in throwing after repeated, powerful contraction of the common flexors (which have their origin on the medial epicondyle) with the arm abducted and slightly flexed (producing a valgus force). A healed injury, identified as an atrophic medial epicondyle, has previously been found in the hypertrophied left humerus of an individual excavated from a mass grave associated with the Battle of Towton (A.D. 1461) (Knüsel 2000). This individual also demonstrates localised hypertrophy of the distal left humerus, a feature seen in modern individuals who engage in strenuous activity involving unilateral limb use. The presence of this lesion in medieval populations provides potential evidence for strenuous youthful training and throwing motions in some individuals, the burial position of whom allows insight into their social status.

Reference:

Knüsel, C.J. (2000). Activity-related changes in casualties from the medieval battle of Towton, A.D. 1461, In: Fiorato, V.; Boylston, A.; and Knüsel, C.J; (eds) *Blood Red Roses: The Archaeology of a Mass Grave from Towton, A.D 1461*. Oxbow Books, Oxford.

Keywords: Humeral medial epicondylar fractures, Medieval populations

SUPERNUMERARY OCCLUSAL (CENTRAL) CUSPS IN OSTEOARCHAEOLOGICAL MATERIALKocsis, G.¹; Marcsik, A.²¹ Department of Dentistry and Oral Surgery, University of Szeged, HUNGARY² Department of Anthropology, University of Szeged, HUNGARY

kocsiss@stoma.szote.u-szeged.hu

Morphological traits of the human dentition have proven useful for the characterization of intra- and inter population variation. These traits include supernumerary central cusps on the occlusal surface of the teeth. According to the literature eight different central cusp forms may occur. On the basis of our previous examination of orthodontic plaster casts of a total of 13,793 teeth, the number with central cusps was 501 (3.96%). In this study we present the occurrence of central cusps in a historic population. The samples (Department of Anthropology, University of Szeged) are derived from the territory of present day Hungary and are dated to the 7th-8th centuries A.D. (no. of specimens = 310). The results are compared with the earlier investigation regarding the living populations. Among the central cusps, the dens evaginatus and the talon cusp are of significance for paleopathology. During the life of the individuals with these cusps, the occlusal supernumerary elevation sooner or later became damaged and produced secondary pathology that manifested as pulpitis, periodontitis, periostitis, etc.

Keywords: Occlusal supernumerary (central) cusp forms, Different teeth, 7th-8th century

PATHOLOGICAL CHANGES OF THE VERTEBRAL COLUMN IN THE MEDIEVAL POPULATION FROM BUGGINGEN (GERMANY)

Kreutz, K.

Department of Anthropology, University of Giessen, GERMANY

kerstin.kreutz@anthr.bio.uni-giessen.de

The appearance, distribution and frequency of certain pathological changes are indicators of the living conditions of historic and prehistoric populations. The cemetery of Buggingen dates from the 9th - 10th century A.D. The remains of 59 skeletons were analysed. It was the aim of the study to analyze the kinds of changes to the vertebral column the individuals had. Degenerative and other changes were observed and documented.

Keywords: Anthropology, Palaeopathology, Vertebral column, Osteoarthritis, Medieval, Germany

POSTER

ENDOCRANIAL LESIONS IN NON-ADULT SKELETONS: THEIR DISTRIBUTION AND POSSIBLE AETIOLOGY

Lewis, M.

School of Conservation Sciences, University of Bournemouth, Talbot Campus, UK
mlewis@bournemouth.ac.uk

Reactive new bone on the endocranial surface of the skull in non-adults, is a relatively new area of investigation in palaeopathology. These features either appear as layers of new bone on the original cortical surface, expanding around meningeal vessels, as “hair-on-end” extensions of the inner diploe, or as “capillary-like” impressions extending into the inner table of the cranium. The lesions are commonly found on the occipital bone, outlining the cruciate eminence, but have also been recorded on the parietal and frontal bones and appear to follow the areas of venous drainage. The aetiology of these lesions is still a matter of controversy and this paper will outline their possible causes and examine their nature and distribution in a group of non-adults from four archaeological sites in England.

Keywords: Endocranial lesions, Non-adults, Aetiology

A VIKING AGE DERMOID CYST

Liebe-Harkort, C.

Archaeosteological Research Laboratory, Ulriksdals kungsgård, Solna, SWEDEN

c_liebe_harkort@hotmail.com

During my work with skeletons from the Viking age site Frojel, Gotland, Sweden, a remarkable discovery was made. In the region of the pelvis of a 30-40 year old female the remains of abnormal bone and teeth were found. After consultation with a medical specialist this was determined to be a dermoid cyst. A dermoid cyst is a benign (in 80-90 percent of cases) form of tumour in the ovary and is seen in women in their fertile age. The dermoid cyst contains skin, hair, bone tissue and teeth.

Keywords: Viking age, Sweden, Female, Tumour

POSTER

MOCHE GIANTS: A CT-SCANNING SURVEY

Lombardi, G.

Laboratorio de Paleopatología, Cátedra Pedro Weiss, Universidad Peruana Cayetano Heredia,
Lima, PERÚ
guido_lombardi@hotmail.com

On August 2001, a small sample from 5 individuals discovered at Huaca Dos Cabezas Moche archaeological site was CT-scanned in Lima, Peru. The first purpose of the survey was to assess the feasibility of a further comprehensive study at a local facility. The second objective was to get an insight on the nature of the pathological process causing these individuals to be called the "Moche Giants". This paper presents the results of the procedure.

Keywords: Moche, Gigantism, Paleopathology

A CASE OF ANKYLOSING SPONDYLITIS FROM THE ROMAN IMPERIAL AGE

Lunardini, A.¹; Vitiello, A.; Minozzi, S.²; Caramella, D.; Catalano, P.³; Fornaciari, G.¹

¹ University of Pisa, Department of Oncology, Section of Paleopathology, ITALY

² Dep. of Ethology, Ecology and Evolution, Unit of Anthropology, Univ. of Pisa, ITALY

³ Archaeological Superintendence of Rome, ITALY

g.fornaciari@med.unipi.it

The skeleton of an adult female (45-55 years old) was found during the excavation of the large necropolis of Imperial Age (I-II century AD), in Viale della Serenissima, Rome. The body was buried in abnormally flexed position, in a small oval ditch excavated under the floor of a Mausoleum. The skeleton presented severe spondyloarthropathy. The spine showed three blocks of fusion: the first involving the III-IV-V cervical vertebrae, the second involving the IV-V-VI thoracic vertebrae and the third involving the VIII-IX thoracic vertebrae. The bodies of the cervical vertebrae were not fused, but fusion was localized at the level of the arcs, of the articular facets and of the spinous processes. Thin bony bridges (syndesmophytes) were evident in the thoracic tract, with the preservation of the intervertebral spaces. Cervical lordosis and thoracic kyphosis were very marked, with “parrot beaks”, involving the last three thoracic vertebrae. The clinical picture was also complicated by left scoliosis of the cervical tract. The results of the macroscopic and radiological studies allowed us to diagnose an advanced form of ankylosing spondylitis with the typical aspect of “bamboo spine”.

Keywords: Ankylosing spondylitis, Rome, Second century, Skeletal remains

A SEVERE CASE OF RICKETS IN THE ROMAN IMPERIAL AGE

Lunardini, A.¹; Vitiello, A.; Minozzi, S.²; Pantano, W.; Caramella, D.; Catalano, P.³;
Fornaciari, G.¹

¹ University of Pisa, Department of Oncology, Section of Paleopathology, ITALY

² Dep. of Ethology, Ecology and Evolution, Unit of Anthropology, Univ. of Pisa, ITALY

³ Archaeological Superintendence of Rome, ITALY

g.fornaciari@med.unipi.it

Rickets is a metabolic disease due to a deficiency of vitamin D, poor diet and insufficient sunlight exposure. The typical stigmata of this disease were found in the skeleton of an adult female discovered in the necropolis of Viale della Serenissima (I-II century AD) in Rome. The spine, incomplete and poorly preserved, presented pathological alterations affecting the thoracic region. It showed a fusion of five thoracic vertebrae: the first and second thoracic vertebrae were fused partially at the level of the bodies and completely at the level of the articular facets and of the spinous processes. Thoracic kyphosis was coupled to a severe scoliosis of the thoracic tract with a curve on the left and collapse of some vertebral bodies. The tibiae had a remarkable degree of lateral bowing with the typical aspect of “bow-legs”, that produced a reduced stature in the subject. Radiological examination of the spine confirmed the collapse of the vertebral bodies on the left and the ossification of the posterior ligaments with fusion of the arcs. Rickets is often referred to as a “disease of civilization” and this case suggests a bad quality of life reflecting the crowded environment of Rome during the Imperial Age.

Keywords: Rickets, Rome, Skeletal remains, Second century

RAPID MANUAL PREPARATION OF GROUND SECTIONS FOR THE MICROSCOPY OF NATURAL BONE TISSUE

Maat, G.¹; Van Den Bos, R.¹; Aarents, M.¹

¹ Barge's Anthropologica, Department of Anatomy, Leiden, THE NETHERLANDS
G.J.R.MAAT@LUMC.NL

It is becoming increasingly pressing for osteoarchaeologists, paleopathologists and forensic anthropologists to have light microscopy as a diagnostic tool within easy reach. Because bone tissue seems so hard to prepare, it is understandable that one tries to avoid the use of microscopy as an aid for the determination of age at death, the diagnosis of diseases, the assessment of bone tissue decomposition, mineralization and metabolism. Refraining from microscopy is often based on the widely spread misunderstanding that the preparation of ground sections is expensive, demands a lot of time and sophisticated instruments, knowledge of plastics and stamina to face failed attempts to produce a useful section. As early as in 1958, Frost recommended an elegant procedure for the "preparation of thin undecalcified bone sections by rapid manual method". The technique was developed for the processing of fresh bone tissue "to provide a means for the microscopic observation of bone that appears close to the ideal of observation *in vivo*". To our entire satisfaction we have also applied Frost's original technique for many years on regular dry bone tissue of moderate to good preservation. It has proven to be very cheap and reliable. With time we made and tested some modifications which further improved the technique and which also made it very suitable for less well-preserved inhumed and even cremated osteoarchaeological and forensic material. As in the original method the modifications need only a few extra but still very basic and cheap products.

Keywords: Bone, Ground section, Inhumation, Cremation, Manual method

ORAL

PATHOLOGICAL ALTERATIONS IN THE 8TH CENTURY SKELETAL SERIES OF CSONGRÁD-FELGYÔ, ÜRMÖS TANYA (HUNGARY)

Maczel, M.^{1,2}; Marcsik, A.¹; Dutour, O.²

¹ Department of Anthropology, University of Szeged, Szeged, HUNGARY

² UMR 6578 CNRS, Université de la Méditerranée, Service d'Anthropologie Biologique, Faculté de Médecine de Marseille, FRANCE

mackzelmarta@yahoo.co.uk

The area of Csongrád-Felgyô is one of the main regions of early Hungarian settlement in the Carpathian Basin (10th c.). The excavations carried out in search of its archaeological traces revealed some pre-existing settlement remains as well as a fairly rich late Avar Age (8th c.) cemetery at this site, more specifically at Ürmös Tanya. The unearthed human skeletal remains were subjected to anthropological study in order to determine the age at death and sex of the skeletons where their state of preservation made it possible. The paleodemographical analysis revealed a rather particular demographic structure: a high number of specimens died in childhood and as young adults. During the paleopathological study, a large range of pathological changes were discovered in the skeletons, such as dental diseases, traumas, degenerative changes, traces of hematological disorders, infectious and other, less common alterations, which are represented by some outstanding examples in the series. We have to note that the high number of cases with the so-called stress indicators (enamel hypoplasia, cribra orbitalia), usually observed in younger age groups, directed our attention to the accompanying probable infectious alterations, such as superficial endocranial alterations, long bone periostitis, vertebral lesions and hypervascularisation, which were also present in a relatively high number in the series. Although in some cases, from the combination of these pathological conditions a more precise etiology could be supposed, namely that of tuberculosis, the state of preservation of the skeletons often hindered us from a more precise diagnosis.

Keywords: Paleopathology, Infections, Tuberculosis, Stress indicators, State of preservation

POSTER

ATYPICAL TUBERCULOUS ALTERATIONS IN AN ANCIENT SKELETON CONFIRMED BY PALEOMICROBIOLOGICAL RESULTS

Maczel, M.^{1,2}; Marcsik, A.²; Dutour, O.¹; Nerlich, A.³; Zink, A.³

¹ UMR 6578 CNRS, Université de la Méditerranée, Service d'Anthropologie Biologique, Faculté de Médecine de Marseille, FRANCE

² Department of Anthropology, University of Szeged, Szeged, HUNGARY

³ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

maczelmarta@yahoo.co.uk

In the skeletal series of Csongrád-Felgyő/Ürmös Tanya (8th c., Hungary), a well-preserved young adult female skeleton was discovered with extreme pathological alterations. During the detailed paleopathological study, multiple cystic cavitations were detected in all of the thoracic and lumbar vertebral bodies. Around the round lytic lesions, of which size varied between 0.2-4 cm, newly formed compact bone could be observed, however the discs seemed to be spared from the disease. The considerable loss of the spongy bone in the thoraco-lumbar vertebrae resulted in angular deformity and fusion. Osteolytic lesions were also detected in the vertebral processes, ribs and sternum. In the endocranial surface, abnormal blood vessel impressions, referring to some kind of meningitis, were revealed as well as signs of inflammation in the sella turcica region. It is interesting to note that these alterations were accompanied by a bilateral cribra orbitalia, which might have been provoked by physiological troubles generated by a chronic disease. The macro-morphological examination left a considerable uncertainty concerning the diagnosis of these alterations. Therefore, vertebral remains were subjected to paleomicrobiological analysis, which unambiguously attested the presence of the 123 bp segment of the IS6110, specific to the *Mycobacterium tuberculosis* complex. From the molecular biological results, the tuberculous etiology of the alterations was concluded, which represent a rather atypical case of TB, and, therefore, might provide reference for future studies.

Keywords: Paleopathology, TB, Multiple cystic lesions, Endocranial alterations, Cribra orbitalia, Paleomicrobiology

POSTER

MULTIPLE MYELOMA AND METASTATIC SKELETAL LESIONS IN OSTEOARCHEOLOGICAL SAMPLES

Marcsik, A.¹; Szathmáry, L.²; Finnegan, M.³

¹ Department of Anthropology, University of Szeged, HUNGARY

² Department of Evolutionary Zoology and Human Biology, Univ. Debrecen, HUNGARY

³ Department of Sociology, Anthropology and Social Work, Manhattan, Kansas, USA

marcsik@bio.u-szeged.hu

Multiple myeloma and metastatic skeletal lesions are not common in human skeletal remains from most archeological periods. The site, degree and morphological characteristics of these diseases often indicate the cause and clinical severity. Paleopathological lesions from 4th-5th (N=650) and 8th-9th (N=350) centuries Hungarian samples were studied using metric, radiographic and gross morphological observation. The purpose of the present study is to add cases of tumors to the paleopathological literature one case of multiple myeloma and three cases of metastatic skeletal lesions. Differential diagnoses of these changes are emphasized.

Keywords: Multiple myeloma, Metastatic carcinoma, Osteoarcheological samples

POSTER

ALTERATIONS OF THE TEMPOROMANDIBULAR JOINT (TMJ) IN THE EPIPALEOLITHIC POPULATION FROM TAFORALT (MOROCCO)

Mariotti, V.¹; Bonfiglioli, B.¹; Belcastro, M.¹; Facchini, F.¹; Condemi, S.²

¹ Dip. di Biologia, E.S. Sezione di Antropologia, Università degli Studi, Bologna, ITALY

² Centre de Recherche Français de Jérusalem, Jérusalem, ISRAEL

valemari@alma.unibo.it

This work focuses on the alterations of the TMJ in the human remains from the Epipaleolithic necropolis of Taforalt (Morocco, about 12-11000 BP). The skulls and dentitions of the adult individuals (39 males, 31 females and 10 n.i.) have been analysed. This population is characterised by heavy dental wear that was interpreted in a previous study as possibly related to a diet rich in abrasive foods, even if, at least in some cases, an extramasticatory use of the dentition could not be excluded. The aim of this work is to investigate the conditions of the TMJ in relation to the patterns of dental wear as well as to the degree of development of muscles used in mastication, in order to provide hypotheses on the etiological factors of the features observed.

Keywords: Temporomandibular joint, Epipaleolithic, Dental wear

POSTER

BILATERAL ACRO-OSTEOLYSIS OF THE FEET IN A CELTIC SKELETON OF IV-III CENTURY B.C. (CASALECCHIO DI RENO, BOLOGNA, ITALY). PROBABLE CASE OF LEPROSY

Mariotti, V.¹; Dutour, O.²; Belcastro, M.¹; Facchini, F.¹; Brasili, P.¹

¹ Dip. Di Biologia, E.S. Sezione di Antropologia, Università degli Studi, Bologna, ITALY

² UMR 6578 CNRS, Université de la Méditerranée, Service d'Anthropologie Biologique, Faculté de Médecine de Marseille, FRANCE

valemari@alma.unibo.it

In the skeleton of an adult male (T. 74) from the Celtic necropolis of Casalecchio di Reno (Bologna, Italia; IV-III century B.C.), a bilateral acro-osteolysis of the feet has been observed. The characteristics of the resorption displayed by some of the metatarsals correspond to those reported in literature as typical of leprosy. The bad preservation status of the rhino-maxillary region does not allow for the identification of possible remodelling. A morphological and radiographic analysis of the bones has been carried out, and the possibility of a diagnosis of leprosy is discussed, taking into account diagnosis of other diseases associated with acro-osteolysis, which can mimic leprosy lesions. The Celtic necropolis of Casalecchio di Reno, referring to the period of the expansion of the Celts in the Italian peninsula, is particularly interesting because, unlike other necropolis of the province of Bologna (Marzabotto, Monte Bibele), does not show archaeological evidence of admixture with the Etruscans, settled in the same area in the same period. The case presented could be one of the most ancient skeletal evidence of leprosy in Italy.

Keywords: Leprosy, Human skeletal remains, Celts, Italy

ORAL

BREAST CANCER AND ITS PALAEOPATHOLOGY. FOUR CASE STUDIES FROM A PORTUGUESE HUMAN SKELETAL IDENTIFIED COLLECTION (LISBON, 20TH CENTURY)

Marques, C.¹; Matos, V.¹

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL
anac@ci.uc.pt

The Museu Bocage (Museu Nacional de História Natural, Lisboa) stores the Luís Lopes Identified Human Skeletal Collection, composed by skeletons dated from the early 20th century. About six hundred individuals have complete records of name, age, sex, occupation, place and cause of death, which represents a valuable instrument in the palaeopathological research. In this paper we intend to present four cases of women, with age ranging from 50 to 78 y.o., that have, on the collection files, breast cancer as cause of death, an already known disease since antiquity. Generally the palaeopathologist urges to propose a diagnosis from diverse lesions that appear on the human skeletal material. In this particular case, since we start off from a known cause of death, our main purpose focus on the description and analysis of the lesions that this specific type of cancer can leave registered on the bones. It is recurrent that the untreated neoplasm of the breast, namely the malignant ones, could extend to bones by metastases that are usually of lytic nature, nevertheless the osteoblastic activity it is a possible occurrence. We intend to report the correlation between proliferative and lytic lesions and to come across the extension and pattern of the distribution over the skeleton, on these particular cases under study.

Keywords: Breast cancer, Metastasis, Human skeletal identified collection, Lisbon, Portugal

POSTER

METHODS OF BONE DIGESTION FOR TRACE ELEMENT ANALYSIS IN PALEODIETARY STUDIES

Martínez, N.¹; Romero, A.¹; De Juan, J.¹; Polo-Cerdá, M.²

¹ Department of Biotechnology, University of Alicante, SPAIN

² Laboratory of Forensic Anthropology and Paleopathology, U.D. Legal Medicine, University of Valencia, SPAIN

noemi@ua.es

Quantification of trace elements in the inorganic fraction of the bone is a very useful tool in paleodietary studies. This method has provided complementary information about the dietary patterns of ancient human groups. In this work we present a comparative study of several digestion procedures of bone preparatory to analysis using Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP/AES).

Keywords: Method, Paleodiet, ICP/AES

POSTER

DEVELOPMENTAL DEFECTS IN SKELETAL REMAINS FROM THE GREAT MORAVIAN AND EARLY MIDDLE AGES CEMETERIES AT DEVÍN (SLOVAKIA)Masnicová, S.¹; Benus, R.²¹ Department of Criminalistics and Forensic Sciences, Bratislava, SLOVAKIA² Department of Anthropology, Comenius University, Bratislava, SLOVAKIA

masnicov@minv.sk

Developmental defects (spina bifida, cranial-caudal vertebral border shifting, congenital blocks vertebra, hypoplasia and aplasia of bones, irregular segmentation of ribs, sternal defects, developmental defects of appendicular skeleton) were scored and prevalences were computed for two skeletal collections from the locality Devín (south-western Slovakia). First sample Devín-Za kostolom (FR) was archaeologically dated to the Great Moravia period (9th century) and included 110 skeletons. Second collection, labelled Devín - Hrad (DH), obtained 216 burials and was archaeologically dated to the Early Middle Ages (11-12th century). In both samples spina bifida revealed high prevalences (23,85% in DH, 23,33% in FR). Sacralization (8% in DH, 6% in FR), which was more common than lumbarization (1,79% in DH), and spondylolysis (7,35% in DH, 3,08% in FR) occurred relatively often in both studied samples. The other developmental defects showed up in only one or few individuals, represented sporadic occurrences.

Keywords: Developmental defects, Paleoepidemiology

HEALTH AND WELFARE IN ANCIENT XIIITH-XVIIITH SANTARÉM. PALEOPATHOLOGICAL CASE STUDIES FROM SANTA MARIA DE ALCÁÇOVA'S CHURCH

Matias, A.

Câmara Municipal de Santarém, PORTUGAL

anmatias@hotmail.com

Evaluation of human remains makes possible to glance into the past and to obtain an image of the people who lived in this specific region of Central Portugal during ancient times. In the present paper are given the results on the paleobiology from the necropolis of Santa Maria de Alcáçova's Church. This anthropological assemblage, dated from the XIIIth to the XVIIIth century, seems to be an important piece for the knowledge of the population that inhabited the historic center of Santarém for almost six centuries. A total of 40 individuals have been excavated to date and this figure could rise to almost 50 (ossuaries). The demographic profile as well as anthropological and pathological aspects are approached. The state of health in ancient populations has always interested physicians, anthropologists, archaeologists and historians. All over the investigations of human remains in this cemetery, we have identified traditional infirmities such as oral, degenerative, traumatic, infectious and other pathological problems, to which we added the possible affects of local customs. Nevertheless, this necropolis have not yielded homogenous data or results, which leads us to believe that the economic and social conditions may also have had a certain influence on the health condition of this population. We intend to reconstruct some aspects of life and death of the portuguese man/woman from the XIIIth to the XVIIIth century in Santarém, based upon their skeletal remains. This is an opportunity to make a bridge between two worlds, the one from dead to living people.

Keywords: Paleopathology, Human remains, Santarém (XIIIth – XVIIIth centuries)

ORAL

DISEASES OF AN UPPER CLASS ROMAN FAMILY FROM COLONIA AUGUSTA TREVERORUM

Meyer, C.

Institut für Anthropologie, Johannes Gutenberg Universität Mainz, GERMANY

AnthroJones@web.de

Skeletal remains of seven adults and two children excavated from a 4th century Roman burial chamber were analysed to assess the diseases affecting members of the higher social strata of a major Imperial Roman town. The pattern of auditory exostoses found in the males and absence of this trait in the females is consistent with previous research and may be taken as further evidence of elevated status and as evidence of frequent bathing. Four secure cases of DISH found among the skeletons are also corroborating indicators of the wealth of this family. Osteoporotic fractures affected one woman, who also had at least three simultaneous periapical abscesses in her dentition. Another woman apparently suffered from a metastasizing carcinoma which produced a mixed pattern of osteoclastic and osteoblastic metastases mainly located in the vertebral column. Multiple sharp traumas suggest a violent death for one of the males, whose skull also bears a small healed cut to the frontal bone. Another male shows a progressive ankylosis of the tarsals, metatarsals and tibiae as well as other joint lesions scattered throughout the skeleton. These massive pathological changes surely made this man largely dependent on others to perform simple tasks. It becomes evident even from this small sample that the high society of the Roman Empire suffered from a multitude of different diseases. Keeping in mind that most diseases do not even leave traces on the bones the overall disease load must have been considerable indeed.

Keywords: DISH, Carcinoma, Exostosis, Trauma, Ankylosis, Osteoporosis

POSTER

THE RESTORATION AND STUDY OF THE OSTEOLOGY COLLECTION OF THE PATHOLOGY MUSEUM IN TURIN

Micalizio, S.¹; Ferrari, L.¹

¹ Department of Biomedical Sciences and Human Oncology, University of Turin, ITALY
ferrari.micalizio@libero.it

The restoration of the Pathology Museum in Turin has been started in 1998, owing to the very bad conditions of the specimens. During the restoration we have found some osseous specimens stored in a cellar. They seem to be very old, but there was no label on most of them, so the dating was impossible. The evidence of their age came just from the comparison with the photographs in the old book of Pathology of Professor Dulbcco and Mottura, filed in the library of the Pathology Department. These unknown specimens are as a matter of fact those of the old collection of the Department dating back to the half of XIX century. It is now possible to recatalogue these specimens after the restoration and compare them with the original diagnosis. So, other than the didactic value for teaching, this osseous collection is precious also for its historic value, due to the original pathological description of the specimens.

Keywords: Pathology museum, Osteology, Restoration

POSTER

EAGLE SÍNDROME AND PALEOPATHOLOGY

Miquel-Feucht, M.¹; Villalaín-Blanco, J.¹

¹Laboratorio de Antropología Forense y Paleopatología, Dpto. Medicina Legal, Facultad de Medicina, Valencia, SPAIN
trifinus@uv.es

The Eagle Syndrome or also denominated stylalgia, is included within the skull-face illness and can be defined in the clinic as pain in the cervical zone and bases of the skull as a result of one hipertrofia of the styloid apophysis. Without a doubt, it is fundamentally a sintomatologic pathology, but with a clear clinic sign: the increase. In this sense, it is possible to comment the null mention of this disease in different paleopathology bibliography, done that must surely to the fragility of this apophysis, which is destroyed with facility, preventing its study. In the present work we expose two cases of possible Eagle Syndrome originating of two different common graves, although both dated between centuries XVIII and XIX.

Keywords: Eagle síndrome, Paleopathology

POSTER

OBSTETRIC PALEOPATHOLOGY: A POSSIBLE CASE OF POST-CHILDBIRTH COMPLICATION WITH DEATH RESULT

Miquel-Feucht, M.¹; Villalain-Blanco, J.¹

¹Laboratorio de Antropología Forense y Paleopatología, Dpto. Medicina Legal, Facultad de Medicina, Valencia, SPAIN

trifinus@uv.es

In 1999, as part of renovation work in the cathedral of Segorbe (Spain), an archaeological excavation of the cloister was conducted. This archaeological investigation showed the presence of a skeleton with a newborn between the femurs. The bioanthropological analysis of the osseous remains determined that the skeleton was that of a young adult woman and a newborn. The absence of other pathologic signs suggests a complication during or after childbirth that resulted in the death of the mother and her newborn.

Keywords: Obstetric paleopathology

POSTER

DISEASE AND DEATH IN THE OLD POPULATION OF SEGORBE (SPAIN) (XV-XVIII CENTURIES)

Miquel-Feucht, M.¹; Villalaín-Blanco, J.¹

¹ Laboratorio de Antropología Forense y Paleopatología, Dpto. Medicina Legal, Facultad de Medicina, Valencia, SPAIN
trifinus@uv.es

In 1999, with the occasion of the accomplishment of publish works in the cathedral of Segorbe (Spain), an archaeological excavation of cloister was accomplishment. This archeological intervention showed numerous skeletons coming from Christian outcrop and dated between the XIV and XVIII centuries. The laboratory study focus in the bioanthropologic analysis of the osseous remains (to determine the minimum number of individuals and the age, sex and stature), and the paleopathologic diagnosis of the different diseases. In this sense they emphasize traumatic, degenerative, malnutricional and infectious diseases.

Keywords: Paleopathology, Christian skeletons, XIVth century

POSTER

**PATHOLOGY AND DAILY LIFE IN MEDIEVAL TIMES IN MAFRA: A CASE FROM SANTO ANDRÉ
NECROPOLIS**

Miranda, M.

Câmara Municipal de Mafra, PORTUGAL

arqueologia@cm-mafra.pt

Among the 27 individuals exhumed from the medieval church of Santo André, we here detach a female individual whose characteristics indicate us how well an individual with some pathological handicaps could well survived during Middle Age times. An exuberant deformity in the left hip compatible with Calvé-Perthes disease is one of the most striking features. Besides, there is a severe deformation of the right calcaneus. Furthermore, right peroneous has thick layers of woven bone. Along the vertebral column, osteoarthritis lesions are frequent with clear signs of scoliosis. In all, it becomes obvious that this individual had severe troubles during her locomotion. Nevertheless, she did attained, at least, 60 years of age. Moreover, there are some “scars of parturition”, namely at the level of the pre-auricular sulcus, allowing us the supposition that she has undergone several pregnancies. Thus, despite her deformities, she could have a normal life, which let us suppose a strong sense of co-operation in her society.

Keywords: Calvé-Perthes, Osteoarthritis, Infections, "scars of parturition"

POSTER

THE PALAEOPATHOLOGY OF SKULLS FROM A MEDIEVAL CAVE CEMETERY NEAR SAFED, ISRAEL

Mitchell, P.

University of London, UK

p.mitchell@clara.co.uk

In 1912 a collection of skulls were deposited in the University of Cambridge. They had been excavated from a cave cemetery near Safed, which is now in Israel. The excavators believed them to be medieval, possibly crusaders, but no further details or excavation report is known. The postcranial remains are presumed to still lie *in situ*. Sixty eight skulls were available for study, of which 3 were children, 37 were adult males, 25 were adult females and in 3 sexing was impossible. Radiocarbon dating of three skulls suggested that the cemetery was in use from the late 13th to early 17th centuries (Mamluk and Ottoman periods). Under the mamluks Safed was a provincial capital and the major trading centre for over two hundred settlements. In the Middle East the mid to late medieval period is a time which has received little attention from palaeopathologists. A range of pathology was noted. Infectious diseases included two cases of treponemal disease (one carbon dated to the 14th century), osteomyelitis and maxillary sinusitis. Weapon injuries were represented by a healed arrow wound and fatal depressed skull fracture, compatible with a mace. Other conditions of interest were cholesteatoma of the ear, dermatofibroma and a variety of dental diseases. It is important to study the palaeopathology of all areas and times in the past, not just those seen as fashionable in archaeological terms. In this way we can appreciate trends in how disease evolved over the centuries and between regions. This is the earliest evidence for treponemal disease in the Middle East and the pre-Columbian date is consequently of great significance.

Keywords: Dental disease, Medieval, Osteomyelitis, Safed, Treponemal disease, Weapon injuries

ORAL

PALEOEPIDEMIOLOGICAL DATA OF SKELETAL TUBERCULOSIS FROM HUNGARY

Molnár, E.¹; Maczel, M.^{1,2}; Marcsik, A.¹; Pálfi, G.⁴; Nerlich, A.³; Zink, A.³; Dutour, O.²

¹ Department of Anthropology, University of Szeged, HUNGARY

² UMR 6578 CNRS, Université de la Méditerranée, Service d'Anthropologie Biologique, Faculté de Médecine de Marseille, FRANCE

³ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

⁴ Hungarian Natural History Museum, Department of Anthropology, Budapest, HUNGARY
balinte@bio.u-szeged.hu

It is generally accepted that the prevalence of skeletal TB must have been remarkably higher in past times than it was suggested on the basis of previous macro-morphological examinations carried out in osteoarchaeological material. This view is also supported by our examinations carried out at the Department of Anthropology, University of Szeged, Hungary. Several thousand skeletons, belonging to 44 series, have been examined macroscopically from the 7-18th centuries from Southern Hungary in order to detect TB infection, but only the “classical”/advanced stage TB alterations could be diagnosed unambiguously till recently. However, in the series (re-) examined in the last some years, with the utilization of new macro-morphological diagnostic criteria and paleomicrobiological analyses, the identification of atypical and early stage TB forms became also possible, which greatly increased the number of detected tuberculous cases.

This research was supported by the National Research Foundation (OTKA grant no. D 38476) and a DAAD-MÖB grant (project no. 20).

Keywords: Paleoepidemiology, Hungary, Skeletal tuberculosis, New diagnostic criteria, Paleomicrobiology

POSTER

PALEOPATHOLOGICAL EVALUATION OF A 7-8TH CENTURY HUNGARIAN SKELETAL POPULATION BASED ON STATE OF CONSERVATION

Molnár, E.¹; Marcsik, A.¹

¹ Department of Anthropology, University of Szeged, HUNGARY
balinte@bio.u-szeged.hu

The Avars are one of the most remarkable populations of the Migration Period Hungary. The 7-8th century series of Szarvas represents an outstanding example of Avar Age skeletal populations with grave goods, like a runic scripted pincase. Our attention was directed to this series by the relatively high number of linear hypoplasia, detected in a previous study. It is generally accepted that taphonomical processes might largely influence the efficiency of paleopathological evaluation. During the examination of the skeletal collection of Szarvas, bone quantification and qualification indices were taken into consideration. The macro-morphological examination of the 421 skeletons was completed with radiological, and in few cases, with paleomicrobiological analyses. Special attention was paid to infectious alterations, particularly to TB, which usually has a relatively high prevalence in Avar Age series. Our sample also shows a high number of infectious changes, however, they do not include any “classical”, advanced stage TB cases. The detected alterations are rather atypical, early stage forms, like endocranial alterations, observed mainly in children and young adults, often in association with other post-cranial pathological conditions. However, the diagnosis of tuberculosis was also confirmed in an aged male individual on the basis of paleomicrobiological analyses carried out on calcified pleura remains. Beside infections, degenerative changes can be seen most frequently in the series both in the spine, and, concerning extra-vertebral locations, in the joints of the foot. Among developmental anomalies, the presence of “butterfly vertebra” is worth mentioning.

This research was supported by the National Research Foundation (OTKA grant no. D 38476) and the János Bolyai Researchers' Grant.

Keywords: Paleopathology, Taphonomical processes, Infectious changes, TB, Degenerative changes, Butterfly vertebra

POSTER

DNA ANALYSIS OF HUMAN ANCIENT REMAINS FOUND IN A GLACIER IN CANADA IN 1999

Monsalve, M.¹; Stone, A.²; Lewis, C.²; Rempel, A.¹; Richards, M.³; Straathof, D.¹; Devine, D.⁴

¹ Department of Pathology and Laboratory Medicine, University of British Columbia, Vancouver BC, CANADA

² Department of Anthropology, University of New Mexico, Albuquerque, USA

³ Department of Archaeological Sciences, University of Bradford, Bradford, UK

⁴ Department of Pathology and Laboratory Medicine, University of British Columbia, CANADA
monsalve@interchange.ubc.ca

Analysis of ancient DNA is emerging as a valuable tool for the study of population origins and evolution. We extracted DNA from human remains radiocarbon-dated circa 550 years old that were found in Tatshenshini-Elsek Park, British Columbia in 1999. The results obtained by PCR direct sequencing of the mitochondrial DNA (mtDNA) control region and by sequencing the clones from overlapping PCR products were duplicated in independent laboratory. The procedures and precautions to avoid contamination with modern sources were crucial to ensure the authenticity of the ancient DNA. We were able to determine the genetic affinities of these remains by comparison with modern human populations.

Keywords: Native American iceman, Ancient DNA

POSTER

RADIOGRAPHIC AND ENDOSCOPIC ANALYSES OF THE GIANTS FROM DOS CABEZAS, PERU

Nelson, A.¹; Cordy-Collins, A.²; Conlogue, G.³; Beckett, R.³

¹ Department of Anthropology, University of Western Ontario, CANADA

² University of San Diego, USA

³ Bioanthropology Research Institute, Quinnipiac University, USA

alanacc@sandiego.edu

The need for a detailed non-destructive radiographic analysis of the Dos Cabezas Giants presented a significant challenge. The delicate osteological material needed to be x-rayed on site, requiring a field radiography lab. This was accomplished by bringing x-ray equipment to Peru, initializing it, and converting field station facilities into a darkroom. This work was done in two separate sessions: 1997 and 2000. Results from the 1997 analysis suggested that endoscopic analysis would add an important new dimension to this study. Endoscopic analysis of the crania was undertaken during the 2000 campaign. In this paper we will present the methods utilized for these analyses. We will also present and discuss the significant points that radiography and endoscopy have added to the description of these unique individuals. These analyses play a central role in the process of differential diagnosis - both in this particular case and in paleopathology in general.

Keywords: Giants, Peru, Radiographs, Endoscopy

GIGANTISM AND THE INDIVIDUALS FROM DOS CABEZAS, PERU

Nelson, A.¹; Nelson, C.²

¹ Department of Anthropology, University of Western Ontario, CANADA

² City of London, Ontario, CANADA

anelson@uwo.ca

The burial context and pathological lesions of the 5 individuals from Dos Cabezas, Peru, are quite remarkable. From the point of view of their contemporaries, perhaps their most striking feature was the fact that they were giants. This paper will address the issue of body size and how gigantism is manifested in the skeleton. We will first place these individuals within a large comparative context of skeletal populations from the Jequetepeque Valley. Second, we will compare their osteological dimensions and indices to a series of modern giants. Finally, we will discuss what other physiological and social features accompany gigantism. The ultimate objective is to explore the question - what does it mean to be a giant? - and what might that have meant to these ancient people.

Keywords: Gigantism, Moche, Peru, Osteometrics

**THE ANALYSIS OF THE FRACTURES OF THE LOWER LIMB IN A SKELETON OF AN ADULT
CARPENTER OF NINETEENTH CENTURY**

Neri, R.¹; Lancellotti, L.¹

¹ Dipartimento di Biologia Evoluzionistica Sperimentale, Area di Antropologia, Bologna, ITALY
lorenzo_lancellotti@hotmail.com

The severe fractures of the right femur and the left tibia and fibula of a skeleton of an adult carpenter male (58 years old) have been observed. The skeleton comes from a Sardinian osteological collection (nineteenth century) of the Museum of Anthropology of the University of Bologna, with age, sex and live-activity known. The pattern of joint disease, entheses development and enthesopathies, have been studied in order to understand a possible cause of these traumatic events (contemporary or not?) and the functional implications of the postural and locomotory behaviour. Moreover, the features of fractures and patterns of healing suggest that the medical treatment was either inadequate or absent.

Keywords: Fractures, Lower limb, Joint disease, Healing, Sardinia

POSTER

PALEOPATHOLOGICAL ANALYSIS OF DISEASES DURING DIFFERENT TIME PERIODS IN THE NECROPOLIS OF THEBES-WEST, UPPER EGYPT

Nerlich, A.¹; Rohrbach, H.¹; Bachmeier, B.²; Hagedorn, H.³; Zink, A.¹

¹ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

² Department of Clinical Chemistry and Clinical Biochemistry, Surgical Clinic, Ludwig-Maximilians-Universität München, GERMANY

³ Department of ENT – Diseases, Ludwig-Maximilians-University of Munich, GERMANY
Andreas.Nerlich@extern.lrz-muenchen.de

We investigated paleopathologically four tomb complexes from the necropolis of Thebes-West, Upper Egypt. The tombs cover various time periods between the Middle Kingdom (MK, c. 2050 - 1650 BC; one tomb exclusively used in this period), the New Kingdom (NK; c. 1550 - 1070 BC) and the Late Period (LP, c. 700 - 500 BC). A total of 484 individuals could be identified, 211 from the MK tomb, and 273 individuals from later burials (NK-LP). The age at death and the sex ratio were constant between the periods with the highest death rate between the 2nd and 3rd decade. The infant/adolescent mortality was comparably low in the different tombs. The high rate of young adults parallels a whole variety of diseases: This holds particularly true for infectious diseases, such as tuberculosis, which also were identified frequently by molecular techniques. Metabolic disorders, such as scurvy, osteomalacia and chronic anemia (cribra orbitalia, porotic hyperostosis) were seen in high frequency in the MK populations, but significantly less in the NK-LP people. Trauma rates were comparably high, and lesions due to degenerative joint and vertebral diseases were significantly higher in LP than in MK or NK individuals suggesting higher mechanical load in the later population. Isolated cases of benign and malignant (secondary) bone tumors and various soft tissue/organ diseases indicate that “civilization” disorders were present when the living conditions assured survival into advanced age. We thereby provide circumstantial evidence that there exist certain differences in diseases and their frequencies between different populations and time periods of ancient Egypt. These data help to reconstruct major aspects of life and disease in ancient Egypt.

Keywords: Mortality rates, Trauma, Metabolic, Soft tissue pathology, Egypt

ORAL

IDENTIFICATION OF M. BECHTEREW IN A SERIES OF ANCIENT EGYPTIAN MUMMIES AND SKELETONS

Nerlich, A.¹; Rohrbach, H.¹; Zink, A.¹

¹ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

Andreas.Nerlich@extern.lrz-muenchen.de

M. Bechterew is a chronic rheumatoid disease mainly affecting the vertebral column. Its typical morphology usually allows a secure identification even in skeletal material. The most prominent finding is an extensive ossification of the spinal ligaments leading to the so-called “bamboo-like” spine. Although recent observations suggest that M. Bechterew was present in ancient populations, only limited data are available for ancient Egypt. In this report we describe three different cases of vertebral alterations (two cases from Middle Kingdom burials, c. 2050 -1650 BC; TT 196, DAN 01.4) and one from a New Kingdom tomb (c.a 1550 - 1070 BC; TT 85) that are very suggestive for the disease. All material comes from an ongoing paleopathological survey of the human remains of the necropolis of Thebes-West with up to now, a total of 946 individuals investigated in various tomb complexes. While one case was identified as a typical bamboo-like and strongly kyphotic vertebral column presenting with complete ossification of the longitudinal spinal ligaments, two further cases additionally revealed ossification of sacroiliac joints and significant enthesopathies at various levels of the postcranial long bones. All affected individuals were obviously of advanced age, in two cases the pelvic bones showed a male morphology. Our observations demonstrate that the typical lesions of M. Bechterew were present in the human remains from one of the largest necropolis of ancient Egypt. The identification of three cases out of a population of approx. 1000 individuals furthermore suggests that this disease was not very frequent, but also not a very rare disease in this ancient Egyptian population.

Keywords: M. Bechterew, Spinal disorders, Rheumatic diseases

ORAL

FUNGAL INFILTRATION IN THE HUMAN DENTINE: ARCHAEOLOGY AND FORENSIC IMPLICATIONS

Oliveira, R.¹; Silva, S.²; Uchoa, D.²; Mesquita, R.¹; Nunes, F.¹

¹ Departamento de Odontologia Social, Faculdade de Odontologia, Universidade de São Paulo, BRAZIL

² Museu de Arqueologia e Etnologia da Universidade de São Paulo, BRAZIL
rogerion@usp.br

The finding of human remains poses questions of forensic interest. One of the first questions regarding human identification refers to the chronology of death. The differentiation between recent and archaeological samples can be accomplished by a dental method using histochemistry: the technique of periodic acid-Schiff (PAS), which verifies the action of fungi in the dentine. The present study is an attempt to evaluate the effectiveness of this technique by examining three samples. The first one refers to an archaeological find of 650 BC; the second collected teeth with a post-mortem age range from 36 to 69 years; and the third comprises two teeth extracted recently. In the oldest sample, the presence of biological agents compatible with fungi was verified. In both the other samples, we observed the absence of damage in the dentine. These results indicate that the presence of fungi in the dentine allows the differentiation of recent and archaeological material. The PAS is a low-cost technique, and provides fast results for a first classification of human remains, constituting an interesting link between archaeology and dentistry.

Keywords: Fungi, Dentine, Archaeology, Forensic dentistry, PAS

POSTER

PALEOPATHOLOGY: THE NEXT 40 YEARS

Ortner, D.J.

Department of Anthropology, Smithsonian Institution, Washington, D.C., USA

ortner.don@nmnh.si.edu

The research I have conducted during the past forty years has had a major emphasis on human skeletal paleopathology. Research that early in my career I thought would be quite impossible in some cases is now done on a regular basis. Other research that I thought would be accomplished with relative ease turns out to be much more challenging than anticipated. This experience highlights the problems in predicting the direction research on paleopathology will take in the future. However, at this stage in my career I do occasionally indulge in speculation regarding the research I would like to do if I had another forty years of active research available. Projects would include:

- a) Research on two or more samples, each of which is composed of at least 10,000 human skeletons, that are from a relatively homogeneous biological context;
- b) Statistical modeling on the biological nature of human archeological skeletal samples;
- c) Additional research on the range of skeletal manifestations within and between all orthopaedic disease categories; and
- d) Collaboration with those doing research on ancient biomolecules to explore the relationship between anatomical and molecular evidence of skeletal disease.

Part of my preoccupation with large skeletal samples is that I remain very suspicious about statistical comparisons of disease prevalence between populations that are based on small total sample sizes. In my paper I shall explore the importance of these projects.

Keywords: Human skeletal paleopathology, Methods, Theory

**PALAEOPATHOLOGICAL EXAMINATION IN A MEDIEVAL OSTEOLOGICAL SERIES
(ÓFÖLDEÁK, HUNGARY)**

Paja, L.¹; Marcsik, A.¹

¹ Department of Anthropology, University of Szeged, HUNGARY
pajalaca2000@yahoo.com

In 1990 a reconstruction and an excavation were started around the medieval church of Óföldreák (Csongrád county, Hungary). Concerning the datation of the graves, the cemetery seems to have been utilised between the 12th and 18th centuries. A considerable part of the skeletal remains originates from graves, but lots of bones come from a reduction area. The series was examined from an anthropological (sex, age at death, measurements) and palaeopathological point of view, using macroscopic and radiological techniques. During the palaeodemographical analysis of the series, the determined minimal number of individuals was 419. The big number of infants refers to a relatively high infant mortality. The male dominance may be explained by the skeleton's bad state of preservation. Among the observed pathological cases, the articular and juxta-articular alterations are present in the highest number, followed by the non-specific infectious cases and traumas. The most common site of articular lesions is the spine. The presence of porotic hyperostosis in the series might be suggestive of an insufficient nutritional intake or the presence of infectious diseases. A probable case of tuberculosis was observed in only one case, in two other cases diffuse idiopathic skeletal hyperostosis was found. Most of developmental anomalies belong to axial anomalies, and the defects did not influence the individual's everyday life in all probability.

Keywords: Articular diseases, Traumatic lesions, DISH, Porotic hyperostosis

ORAL

TREPONEMAL DISEASE IN A PRE-COLUMBIAN POPULATION FROM ANSE A LA GOURDE, GUADELOUPE

Panhuysen, R.¹; Hoogland, M.²

¹ Barge's Anthropologica, Leiden University Medical Center, RC Leiden, THE NETHERLANDS

² Faculty of Archeology, Leiden University, Leiden, THE NETHERLANDS

raphael@ision.nl

At the site of Anse a la Gourde on the Caribbean island of Guadeloupe (France) 74 graves were excavated. In general, the shallow burial pits had an oval shape measuring about 70 by 50 centimetres. Most individuals were buried in a sitting or half-sitting position with flexed lower extremities. The graves were situated in and around an extended settlement and date from the 11th to 12th centuries AD. Hitherto a sample of 12 burials has been examined. This sample consisted of two non-adults (< 20 years) and 10 adults. Sex could be determined for 9 individuals: 3 males and 6 females. Due to the poor preservation of the skeletal remains estimation of age was generally not feasible. Mean stature for females was 150.3 centimetres (n=6) and for males 161.1 centimetres (n=3). In the sample infectious disease was the most frequently found pathological condition, viz. in the bones of seven individuals. Five individuals had gummatous lesions, which in four individuals were found in combination with subperiosteal new bone formation, osteomyelitis and saber shin tibia. The combination of these bone changes is considered indicative for an infection with treponema. Because of the relatively high prevalence of osseous changes associated with treponemal disease a follow-up study was designed in order to examine all excavated skeletal remains. This paper will present the physical anthropological and paleopathological data collected in this follow-up study and will discuss the presence of treponemal disease in this pre-Columbian population.

Keywords: Treponema, Caribbean, Pre-Columbian, Infectious disease, Paleodemography

ORAL

TB IN THE MUMMIES OF VÁC: MORPHOLOGICAL EVIDENCES OF THE DISEASE AND WIDESPREAD OCCURRENCE OF *MYCOBACTERIUM TUBERCULOSIS* DNA FROM 18TH-19TH CENTURY HUNGARIAN

Pap, I.¹; Pálfi, G.¹; Kristof, L.¹; Barta, M.²; Fletcher, H.³; Spigelman, M.³; Donoghue, H.³

¹ Hungarian Natural History Museum, Department of Anthropology, Budapest, HUNGARY

² Department of Radiology, National Medical Center, Budapest, HUNGARY

³ Department of Medical Microbiology, University College London, London, UK

gyorgy.palfi@om.gov.hu

Remains of 265 individuals from 1731-1838 were discovered during the reconstruction of the Dominican Church of Vác, Hungary in 1994. Seventy percent of the bodies were naturally mummified. Preliminary paleopathological studies had evidenced traces of TB infection in the series. Examinations of the remains of a young individual had revealed evidences of advanced stage tuberculous spondylitis. X-ray and CT analyses of a small number of individuals had indicated skeletal alterations and calcified lung lesions of probable TB origin. Histological analyses of lung remains have revealed demonstrable acid-fast bacteria suggestive of TB infection. Paleomicrobiological examination of 168 individuals for the presence of *Mycobacterium tuberculosis* complex (MTB) DNA was undertaken. Specific DNA amplification methods for MTB showed 61% of individuals were positive and that the incidence varied according to age at death and sampling site in the body. Radiographs were obtained from 27 individuals and revealed an association between gross pathology and the presence of MTB DNA. There was an inverse relationship between PCR positivity and MTB target sequence size. In some cases the preservation of MTB DNA was excellent and several target gene sequences could be detected from the same sample.

References:

- Pap, I.; Jozsa, L.; Repa, I.; Bajzik, G.; Lakhani, S. R.; Donoghue, H. D.; Spigelman, M. (1999). 18-19th century tuberculosis in naturally mummified individuals (Vác, Hungary). In: Palfi, G.; Dutour, O.; Deak, J.; Hutás, I. (eds), *Tuberculosis. Past and Present*. Golden Book Publisher Ltd & Tuberculosis Foundation, Budapest & Szeged, pp. 421-428.
- Pap, I.; Kustar, A.; Bernert, Z.; Szikossy, I.; Donoghue, H. D.; Spigelman, M.; Hershkovitz, I.; Kristof, L. A.; Barta, M.; Palfi, G. (2001). Paléopathologie rachidienne de deux momies du XVIII^e siècle. In: Bérato, J. (ed) *Centre Archéologique du Var*. CAV, Toulon, pp. 40-42.

Keywords: TB, *Mycobacterium tuberculosis*, Ancient DNA, Mummies, Hungary, 18-19th centuries

POSTER

RELATION OF HEALTH AND DIET OF NEOLITHIC GREECE

Papathanasiou, A.

Ephorate of Paleoanthropology and Speleology, Athens, GREECE

apathan@ascsa.edu.gr

The most prevalent pathological conditions among Greek Neolithic populations are mild cribra orbitalia and porotic hyperostosis, anemic conditions resulting from increased production of red blood cells, in response to different kinds of anemia of genetic or nutritional origin or/and in combination with bacterial and parasitic diseases. This study compares the diet of Greek Neolithic populations to determine the relationship between nutrition and pathology during the transition to agricultural economy. Stable isotope analysis of carbon and nitrogen from human bone collagen and carbonate apatite was used on 102 samples representing six populations, three coastal, (Alepotrypa, Franchthi, Kephala), and three inland, (Theopetra, Tharrounia, Kouveleiki). The results, namely the very negative carbon values, the low nitrogen values, and the intermediate values of the difference between carbonate and collagen carbon readings, strongly indicate the consumption of a diet focussed on C3 terrestrial resources, including mainly agricultural plants and almost certainly some animals. Marine foods were a minor part of the diet of all sites. Furthermore, the small range of values implies homogeneity in their diet. The analysis suggests that Neolithic Greece, regardless of geographic location, was occupied by agricultural groups with primarily terrestrial subsistence strategy with only occasional exploitation of animal and marine protein resources. The combination of cereals and pulses is a rich source of energy, protein and aminoacids, but does not supply all the required vitamins and iron. Therefore, such a diet can account for the observed anemic conditions of the Neolithic populations, which are most probably due to iron deficiency anemia.

This research was funded by the J. L. Angel fellowship of the American School of Classical Studies at Athens. The laboratory analysis was performed at the Bone Chemistry Laboratory, Department of Anthropology of the University of Florida, Gainesville by Theresa Schober.

Keywords: Paleodiet, Stable isotope analysis, Neolithic Greece

ORAL

BIBLIOMETRIC STUDY OF PALEOPATHOLOGY'S SPANISH PRODUCTION

Peral, D.¹; Fernández, M.¹; Navas, R.; Cáceres, M.P.²; Etxeberria, F³

¹ Universidad de Extremadura, Badajoz, SPAIN

² Fac. de Biblioteconomía y Documentación, Antiguo Hospital Militar (Alcazaba de Badajoz),
Badajoz, SPAIN

³ Facultad de Medicina, Universidad del País Vasco, San Sebastián, SPAIN
diego@unex.es

We conducted a bibliometric study of publications in paleopathology from the Database of Paleopathology made by the Spanish Association of Paleopathology. First, we studied the different types of publications and made a table that shows in two columns the kind of documents and how many there are in the Database. Second, we made another table with two columns to show the name of the journals and the number of articles they contain, to show the productivity of the various journals. The productivity of authors is the second parameter that we apply. We classify the scientific community by the number of publications rather than the quality of the publications, but we can consider that the most productive authors of scientific literature usually have the highest scientific quality. For this reason, it is very interesting to study this parameter and we made a table that shows in two columns the number of publications per author and the number of authors that publishes this number of publications. Finally, we calculate the Lotka index (the productivity index of each author), and we apply the De Solla Price concept (the most important scientific authors in an area of knowledge equals the square root of the total number of authors).

Keywords: Paleopathology, Bibliometry, Lotka Index, Productivity Index

ORAL

NON-OCCLUSAL MICROWEAR ANALYSES INDICATIVE OF DIETARY HABITS: A NEANDERTHAL RESEARCH PROJECT

Peréz-Pérez, A.¹; Maroto, J.¹; Fiego, J.¹; Turbon, D.¹

¹ Dept. Antropologia, Universitat de Barcelona, SPAIN

alejan@bio.ub.es

Bucal microwear studies are currently been applied to solve dietary-related hypotheses on human populations. Research started with the analysis of the intrapopulation variability of the microwear pattern in a Medieval population from Spain (Pérez-Pérez, Lalueza & Turbón, 1994). First attempts to analyse the diet of fossil remains were done with Gibraltar and Banyoles (Lalueza and Pérez-Pérez, 1993; Lalueza et al, 1993, respectively). Then research focused modern hunter-gatherer populations and also fossil groups. Currently, Primate teeth are being studied and a database for Plio-Pleistocene Hominins is being analysed. Projects on non-occlusal tooth microwear are carried out in Africa (Kenya, Tanzania, Ethiopia, South Africa), and in Europe (including Lower, Middle and Upper Palaeolithic populations).

References:

- Pérez-Pérez, A.; Lalueza, C.; Turbón, D. (1994) Intraindividual and Intragroup Variability of Buccal Tooth Striation. *Am. J. Phys. Anthropol.* 94(2): 175-187.
- Lalueza, C.; Pérez-Pérez, A. (1993) The diet of the Neanderthal Child Gibraltar 2 (Devil's Tower) through the study of the vestibular striation pattern. *J. Hum. Evol.*, 24(1): 29-41.
- Lalueza, C.; Pérez-Pérez, A.; Turbón, D. (1993) Microscopic study of the Banyoles mandible (Girona, Spain): diet, cultural activity and toothpick use. *J. Hum. Evol.*, 24(4): 281-300.

Keywords: Microwear, Teeth, Diet, Neanderthal

POSTER

**A CASE OF MULTIPLE TRAUMAS IN A INDIVIDUAL MALE FROM GRÃO VASCO MUSEUM
(VISEU - PORTUGAL)**

Pinto Reis, M.¹; Pereira, C.¹

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL
marta_pinto_reis@yahoo.com

In March 2002, during the excavation of a medieval necropolis at Grão Vasco Museum - Viseu (Portugal), a male individual was exhumed. The paleopathological analysis of this skeleton revealed various indicators of injury at the thorax, upper and lower limbs. The individual shows severe lesions of osteoarthritis as well as generalised enthesopathies. The importance of this report is based on the attempt to discuss the patterns of trauma in Portuguese medieval individuals, for which a paleopathological analysis of injuries is relevant.

Keywords: Medieval, Injury, Patterns

POSTER

OSTEOARCHAEOLOGICAL EVIDENCES OF TUBERCULOSIS IN THE FIRST POPULATION OF VALLENTIA, SPAIN

Polo-Cerdá, M.¹; García-Prósper, E.¹

¹ Laboratory of Forensic Anthropology and Paleopathology, U.D. Legal Medicine, University of Valencia, SPAIN

Manuel.Polo@uv.es

The Roman necropolis in Quart street, Valencia (Spain), is a big cemetery chronologically dated from 2nd century BC to 4th century AD, and located in the historical city centre. Nowadays, 180 inhumations and 64 cremations have been excavated. About the inhumations, we have documented 13 cases of pronus skeletons and other bodies were buried in singular positions. One of them presents compatible lesions with tuberculosis (Pott's disease), and the second presents small lesions from the same illness.

References:

- García Prósper, E.; Polo Cerdá, M. (2002). Enterramientos en decúbito prono y un posible preso entre los primeros pobladores de valencia (siglos II a.C- III d.C). In: *Actas del VI Congreso Nacional de Paleopatología*, UAM, Madrid (*in press*).
- García Prósper, E.; Guérin, P (2002). Nuevas aportaciones en torno a la necrópolis romana de la calle Quart de Valencia (S.II A.C - IV D.C). In: *Actas del Congreso Internacional Espacios y usos funerarios en el Occidente Romano*. Córdoba (*in press*).
- García Prósper, E; Martí, M; Guérin, P.; Ramírez, M (1999). La necrópolis romana de la calle Quart. Resultados recientes. In: *Actas del XXV Congreso Nacional de Arqueología*. Generalitat Valenciana, Valencia, pp. 295-305.
- Guérin, P. et al. (1998). Los primeros pobladores de Valentia. Excavaciones en la necrópolis romana de la Calle Quart. *Revista de Arqueología*, 204, Abril. Madrid, pp. 34-45.

Keywords: Paleopathology, Funerary archaeology, Roman age, Ritual, Tuberculosis, Pronus burial, Pott's disease

POSTER

FRACTURE, SURGICAL INTERVENTION OR ANEURYSM? IN A SKELETON OF THE XVTH CENTURY, IN THE PAROCHIAL CEMETERY OF PUÇOL (VALENCIA, SPAIN)

Polo-Cerdá, M.¹; Piquer, H.²; García-Prósper, E.¹

¹ Laboratory of Forensic Anthropology and Paleopathology, U.D. Legal Medicine, University of Valencia, SPAIN

² Valencia, SPAIN

Manuel.Polo@uv.es

In the archaeological excavation at the parochial cemetery in Puçol (Valencia, Spain) 1.024 skeletons were recorded. In this work, we present the bioanthropological and paleopathological studies on a skeleton of a senile woman, dated from XV century. In her right femur, there is a serious lesion, which could have been:

- a) A spiral fracture.
- b) A surgical intervention.
- c) An impression of an aneurysm.

The possible diagnosis are discussed using macroscopic and radiological techniques.

Acknowledgments:

To F. Rubio and E. Ruiz, directors of archaeological dig of the parochial cemetery in Puçol (Valencia, Spain) for the archaeological information.

Keywords: Paleopathology, Femur, Spiral fracture, Aneurysm, Surgical intervention, XVth century, Puçol, Spain

POSTER

THE BURIALS OF COVA DELS BLAUS, BRONZE AGE (VALL D'UIXÓ, CASTELLÓ, SPAIN): AN APPROACH TO THE PALEODIET THROUGH DENTAL PALEOPATHOLOGY, OCCLUSAL WEAR AND MICROWEAR PATTERN

Polo-Cerdá, M.¹; Romero, A.²; Casabó, J.³; De Juan, J.²

¹ Laboratory of Forensic Anthropology and Paleopathology, U.D. Legal Medicine, University of Valencia, SPAIN

² Department of Biotechnology, University of Alicante, SPAIN

³ Conselleria de Educación y Cultura. Generalitat Valenciana. Valencia, SPAIN
Manuel.Polo@uv.es.

In the Cova dels Blaus (Vall d'Uixó, Castelló, Spain) a burial level chronologically dated from Bronze Age was excavated. It is a collective burial made by 9 inhumations (6 adults and 3 infants). In this work, we present the preliminary results obtained for dental pathology studies (caries, dental calculus, periodontal disease and *ante mortem* tooth loss), occlusal wear and microwear pattern observed by scanning electron microscopy (SEM). The results obtained for the dental pathology, occlusal wear and pattern of striations (scratch lines) denote a vegetarian diet, rich in carbohydrate and abrasive.

Acknowledgments:

To María Luisa Rovira, Director of Museu Arqueològic de la Vall d'Uixó, Spain. This work was supported by the Conselleria d'Educació i Ciència (Generalitat Valenciana). The microstriation studies were supported by the project PB960414 (DGICYT).

Keywords: Paleodiet, Bronze Age, Spain, Caries, Calculus, Occlusal wear, Dental microwear

POSTER

PATTERNS OF DENTAL HEALTH IN AN IMPERIAL ROMAN SKELETAL SAMPLE FROM ISOLA SACRA, ITALY

Prowse, T.¹; Saunders, S.²; Bondioli, L.³; Macchiarelli, R.⁴

¹ School of Geography and Geology, McMaster University, Ontario, CANADA

² Department of Anthropology, McMaster University, Ontario, CANADA

³ L. Pigorini National Museum of Prehistory and Ethnography, Rome, ITALY

⁴ Laboratoire de Géobiologie, Biochronologie et Paleontologie Humaine, Université de Poitiers,
FRANCE

saunders@mcmaster.ca

The people buried in the necropolis of Isola Sacra were middle-class inhabitants of Portus Romae, one of the main maritime ports for the Roman Empire during the 1st to 3rd centuries AD. The necropolis contains a variety of burial structures, ranging from simple pits to elaborate monumental tombs. This study examines dental health within the sample based on sex, age, and burial type, and compares overall level of dental health with other Roman period samples. Data on caries, *ante mortem* tooth loss, tooth wear, abscesses, and calculus were collected from 364 individuals. There are differences in dental health between the sexes within different age groups, but only the calculus data are significantly different. There is no significant association between dental health and burial type. The results indicate a moderately good overall level of dental health in the Isola Sacra sample.

Keywords: Dental pathology, Caries, Tooth loss, Calculus, Imperial Roman period

POSTER

**AGE ESTIMATION BY TOOTH CEMENTUM ANNULATION OF CREMATED TEETH -
POSSIBILITIES AND PROBLEMS**

Rafigh, N.¹; Hardt, M.²; Kreutz, K.¹

¹ Department of Anthropology, University of Giessen, GERMANY

² Central Biotechnology Unit (ZBB), University of Giessen, GERMANY

kerstin.kreutz@anthr.bio.uni-giessen.de

In this study the method of counting tooth cementum annulation for age estimation was applied to cremated teeth of individuals with known age from recent populations (material from different dentists), as well as undefined cremated teeth from Roman burials from different cemeteries in Germany. The aged teeth were burned at different degrees ranging from 250 C° to 900 C° with a different duration of burning time. Both the known age and undefined cremated teeth were prepared for the histological analyses with methods known from literature for cremated and non cremated teeth. The investigation produced some important and disturbing problems with the histological analysis. These problems had to be identified, by macroscopic, microscopic and scanning-electron microscopic techniques, documented, discussed and solved with modifications of the applied methods. This study will show, as far as possible, the possibilities and problems of age estimation by tooth cementum annulation of cremated teeth in comparison with other already known investigations.

Keywords: Anthropology, Tooth cementum annulation, Cremated teeth, Age estimation, Germany

POSTER

TO THE MUSEUM OF THE FACULTY OF MEDICINE. COIMBRA, 1288-2002

Rasteiro, A.

Faculdade de Medicina, Universidade de Coimbra, PORTUGAL

arasteiro@aeiou.pt

King Dinis authorized the first Portuguese University in March 1, 1290 (Era 1328). The first Schools were Arts, Canon, Civil Law and Medicine. The exigency of handwriting prescriptions imposes the permanence of the medical students in the Monastery of «Santa Cruz» (Coimbra) from January 26, 1538 to 1544. In 1772, the Medical teaching proposes the comparison between drawings and living plants. («Estatutos da Universidade», Curso Médico, 1772, Livro III, Parte I, Título III, Cap.I, 10 e 9). «Four-eyes» gives interesting examples of misunderstanding of these practices. The expression four-eyes in Luis Frois' «Historia de Japan» is relatively to Francisco Cabral, in Guifu 1571, who was remembered by Kano Naizen (Namban screens, 1603-1610). This expression was misunderstood in February 5, 1993 in the stamps of the Portuguese Post (C.T.T.). The eyes of the Brazilian “torohupira” (Cristovão de Lisboa, 1624-27), the «quatro-olhos» fish of António Vieira, enable its identification as *Anableps tetrophthalmus* (1654). Jaime Walter (1967) and «Comissão dos Descobrimientos» (2000) misunderstood the Cristovão de Lisboa sketches.

References:

AntónioVieira: *Sermões (Sermão de Santo António aos Peixes)*, Europa-América, 1986.

Cristovão de Lisboa: *História dos Animais e Arvores do Maranhão*, ed. Jaime Walter, Arquivo Histórico Ultramarino, 1967, reedition: Comissão Descobrimientos 2000.

Luis Frois: *Historia de Japan*, ed. José Wicki, Biblioteca Nacional, Lisboa, 1976.

Rasteiro, A.; Ramos, M.C.: Der europaische Einfluss auf die japanische Augenheilkunde im XVI. Jahrhundert, *Zentralblatt Ophthalmologie*,1990, 134: 851

Keywords: History of Medicine, Coimbra University, Museum, Portugal

POSTER

A BIOCULTURAL ANALYSIS OF THE HEALTH OF THE IRON AGE POPULATION OF DORSET, ENGLAND

Redfern, R.¹; Brickley, M.²

¹ High Wycombe Buckinghamshire, ENGLAND

² Department of Ancient History & Archaeology, University of Birmingham, GREAT BRITAIN
rebeccaredfern@hotmail.com

There is a paucity of knowledge surrounding the health of the Iron Age populations in Britain, due to the lack of an inhumating tradition. In Dorset, a continuous trend of inhumation was practiced from the late Bronze Age to the Roman period, which allows for an indepth analysis to be undertaken on both adult and subadult remains. Results so far have provided an invaluable insight into medical treatment, trauma patterns, interpersonal warfare, metabolic disease and importantly subadult health statuses.

Keywords: Health, Sex, Iron Age, England

IDENTIFYING EQUESTRIAN SKELETAL MARKERS

Reinhard, K.¹; Wall, N.²

¹ School of Natural Resource Sciences, University of Nebraska, Lincoln, Nebraska, USA

² Heartland Center for Leadership Development, Lincoln, Nebraska, USA

kreinhard1@unl.edu

Continual use of horses for transport, subsistence, scouting, warfare, and seasonal migration typified the Omaha Indian culture of northern Nebraska from 1750 to 1920. Horses were only abandoned in the twentieth century. In the analysis of Omaha skeletons dating between 1780 and 1820, a search was made for skeletal stress indicators of equestrian lifestyle. Several areas of remodelling were found. The main focus of change was in the metacarpals, femora, *os coxae*, first ribs, clavicles, and sternum. Trauma was associated with equestrians. Schmorl's nodes were commonly observed in the vertebral of individuals who rode horses. Fractures of the upper extremities were also observed. Finally, radiographic assessment showed periostitis and stress fractures of the tibiae. In summary, the skeletal indicators of equestrian life are diverse in the bones affected and the types of changes exhibited.

Keywords: Activity, Horse, Equestrian, Omaha, Trauma, Arthritis

ORAL

A CASE OF BEHEADING DATING FROM THE CELTIC PERIOD (1ST BC, COURNON, FRANCE)

Richier, A.¹; Ardagna, Y.²; Vernet, G.³; Dutour, O.²

¹AFAN, Marseille, FRANCE

²Unite d'Anthropologie CNRS UMR 6578, Université de la Méditerranée, Faculté de Médecine de Marseille, FRANCE

³Service Archéologique Municipal de Clermont-Ferrand, FRANCE

Yann.Ardagna@medecine.univ-mrs.fr

Excavation in the site “Cournon, La Grande Halle” revealed a large celtic necropolis dated from the 1st century BC. Burial number SP 2471 presented several evidences of beheading. The position of the body showed a proper anatomical situation of the head in spite of dislocation C1-C2 and abnormal rotation of the head on the right side. Moreover, the two arms were in unusual position, with internal rotation of the humerii, crossing each other of the forearms and the palm up position of left hand. The second cervical vertebra showed complete section of the odontoid apophysis, associated with cutmarks on the vertebral body. The occipital bone presented a large cut on the left side of the squama. These lesions corresponds to those already described for decapitation in antiquity (Mckingley et al, 1993; Boylston *et al.* 2000). The reconstruction of the chronology of the wounds in the hypothesis of execution is discussed in the historical context of the Celtic populations in Gaul.

Keywords: Gaul, France, Decapitation, Burial context, 1st century BC

POSTER

A MEDIEVAL INDEPENDENT SOCIETY OF WOMEN. ABOUT 120 SKELETONS FROM THE "BEGIJNENHOF" CEMETRY BRED, THE NETHERLANDS

Rijpma, F.¹; Maat, G.²

¹ Willem van Outhoornstraat, Den Haag, THE NETHERLANDS

² Barge's Anthropologica, Department of Anatomy, Leiden, THE NETHERLANDS

frijpma1@mmm.com

An extraordinary collection of about 120 individuals, mostly women but surprisingly also a few men, was excavated in the Parc "Valkenberg", Breda, The Netherlands. It turned out to be the cemetery from the "Begijnenhof". A begijnenhof is an enclosed area (hof = courtyard) within the city walls which can be found in many old towns in the lowlands (Belgium, The Netherlands). In these courtyards (like a little village within the city), women lived together and survived by working, earning a living by for example, brewing beer or hand and needle work. They were truly independent from men. This movement was part of the Catholic Church although the Pope tried to brand them heretics several times in history. Within the lowlands the "Begijnen" movement survived way into the 20th century. The skeletons presented on the poster show some interesting pathology. Also a short history of Breda, the "Begijnenhof" and the excavation is presented. The final publication (Barge) will be ready at the beginning of 2003.

Keywords: Begijnen, Women society, 120 individuals, Medieval

POSTER

THE DETERMINATION OF ADULT AGE AT DEATH USING THE *ACETABULUM*. A PRELIMINARY STUDY

Rissech, C.¹; Rougé-Maillart, C.²; Telmon, N.²; Rougé, D.²; Malgosa, A.¹

¹ Unitat d'Antropologia, Facultat Ciències, Universitat Autònoma de Barcelona, SPAIN

² Unité Medico-Judiciaire, Centre Hospitalier Universitaire, Toulouse, FRANCE

Carme.Rissech@uab.es

The accurate estimation of age at death of adult human skeletal remains is very important in forensic and anthropological studies. Current methodologies for adult age estimation based on the coxal bone take into account the auricular surface and the pubic symphysis. However these surfaces have little post-mortem resistance. The central region of the coxal bone is the best-preserved area. Therefore, the development of a methodology for age estimation based on the *acetabulum* could be a useful tool for human remains analysis. The main purpose of this work is to analyse the changes in the *acetabulum* related to ageing. The analysed sample consists of coxal bones from 30 masculine individuals of known age ranging from 24 to 81 years. In order to evaluate the usefulness of possible criteria, 4 morphological degenerative changes were selected. The results show a significant correlation with known age and also with the criteria of Lovejoy et al. From the perspective of forensic and anthropological sciences, the *acetabulum* could be an effective indicator of age at death.

Keywords: *Acetabulum*, Age, Coxal bone

POSTER

POPULATION STUDIES OF PALAEPATHOLOGY IN BRITAIN

Roberts, C.

Department of Archaeology, University of Durham, ENGLAND

c.a.roberts@durham.ac.uk

In the last ten years there have been considerable developments in the study of palaeopathology in Britain. This is mainly because of the increase in the numbers of people trained in the discipline at both theoretical and practical levels. There has also been a rise in the number of people studying skeletal populations rather than individual skeletons for evidence of disease. This session has therefore been organised with the aim of bringing together a number of younger (and not so young!) researchers in palaeopathology who are contributing considerably to our understanding of the health and well-being of past human populations in Britain.

TUBERCULOSIS IN BRITAIN: ITS HISTORY, PALAEOEPIDEMIOLOGY

Roberts, C.

Department of Archaeology, University of Durham, ENGLAND

c.a.roberts@durham.ac.uk

This paper aims to document the distribution of skeletal tuberculosis (TB) in Britain and consider its origin, evolution and palaeoepidemiology. Specific and non-specific skeletal evidence for tuberculosis is considered from published and unpublished skeletal reports, in addition to the occurrence of skeletal leprosy which may be relevant to the epidemiology of TB. Results show that TB occurs first in the Romano-British period (4th century AD), increases in the early Medieval period, but becomes more apparent in the later Medieval era. The distribution pattern mirrors that for leprosy and is focused mainly in the south and east of England. Population density, poverty, other mammals, and movement of people are considered as possible factors responsible for the appearance and maintenance of TB in Britain. The apparent decline in leprosy as a possible consequence of the rise in TB is also considered (Manchester, 1984). However, confounding factors in assessing whether TB contributed to leprosy's decline around the 14th century are concerned with the impossibility in the majority of cemetery excavations to consider detailed stratigraphic relationships between skeletal remains. Nevertheless, recent work by Wilbur et al. (in press) suggests that the cross immunity hypothesis may not be as clear cut as once thought. With respect to the origin of TB in humans relating to other animals such as cattle, recent DNA analysis suggests that this may not be the case (Brosch et al., 2002). Migration of people to Britain, poverty and high population density are suggested as responsible for the pattern seen.

Keywords: Tuberculosis, Britain, Palaeoepidemiology, Roman, Early and Late Medieval

OCCUPATIONAL STRESS MARKERS IN PREHISTORIC COASTAL POPULATIONS FROM RIO DE JANEIRO STATE, BRAZIL: FIRST RESULTS

Rodrigues-Carvalho, C.¹; Souza, S.²; Salles, A.³

¹ Antropologia Biológica, Departamento de Antropologia, Museu Nacional/UFRJ, Rio de Janeiro, BRAZIL

² Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, BRAZIL

³ Departamento de Anatomia, UFRJ, Rio de Janeiro, BRAZIL

claudia@mn.ufrj.br

This study, still in progress, aim to investigate occupational stress markers (mainly osteoarthritis evidences and muscle-skeletal stress markers) in many prehistoric shellmounds populations of Rio de Janeiro State coast. The main goal of this research is to evaluate stress marker's frequencies and intensities in each population, in the search of specific and/or general occupational patterns among these different groups, who shared a common lifestyle based on coastal exploration. The skeletal series under study represents a great sample of shellmounds settlements in time (the earliest shellmound around 7000 BP and the later around 2000 BP) and space from Rio de Janeiro and we expect to have a wide perception of the variability of occupational stress in these prehistoric coastal populations. In this work we present our first results in upper limbs occupational stress markers from two populations nearly located - the Beirada (4.520 +/- 190 BP) and Moa (3.960 +/- 190 BP) shellmounds - and discuss the similarities and differences of occupational stress patterns founded in these groups.

Keywords: Occupational stress markers, Osteoarthritis, Shellmound, Coastal populations, Brazil

POSTER

PALEOPATHOLOGICAL EXAMINATION OF PRESERVED CORPSES: AUTOPSY AND RADIOLOGY

Rodríguez-Martín, C.

Instituto Canario de Bioantropología, Organismo Autonomo de Museos y Centros, Cabildo Insular de Tenerife, Santa Cruz de Tenerife, Islas Canarias, SPAIN

conrado@museoscabtf.rcanaria.es

The word mummy is usually applied to every type of preservation, however it is important to note that there are several and different ways through which a human (or animal) corpse may be preserved obligating to the examiners to work in a different manner too. This paper deals with these types as well as with the problems related to the study, the scientific methods of examination and a brief summary of the conservation of the mummy once it has been studied. We emphasize the strong necessity to prepare for good an international, standardized, protocol of mummy study. In summary, this paper will be divided in the following sections:

- 1) Types of preservation: natural (mummification, adipocere formation or saponification, corification, preservation in iron coffins, bog bodies, and frozen bodies).
- 2) Problems related to mummy studies: these problems can be divided in technical or biological and socio-political.
- 3) Autopsy of the preserved corpse: dissection vs. endoscopy, advantages and disadvantages of both methods.
- 4) Radiological methods or non-invasive methods: plain radiography (field radiology and clinical radiology), mammography, CT Scan, digital radiography, magnetic resonance imaging; and other less used methods in mummy studies.
- 5) Short overview on mummy conservation.

Keywords: Mummy

ANTHROPOLOGICAL AND PALEOPATHOLOGICAL OBSERVATIONS IN THE TWO FOUNDERS OF THE MONASTERY OF TEGERNSEE, SOUTHERN GERMANY

Rohrbach, H.¹; Zink, A.¹; Bachmeier, B.²; Hagedorn, H.³; Szeimies, U.⁴; Nerlich, A.¹

¹ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

² Department of Clinical Chemistry and Clinical Biochemistry, Surgical Clinic, Ludwig-Maximilians-Universität München, GERMANY

³ Department of ENT – Diseases, Ludwig-Maximilians-University of Munich, GERMANY

⁴ Dept. of Diagnostic Radiology, Hospital Josephinum, Muenchen, GERMANY

Andreas.Nerlich@extern.lrz-muenchen.de

The legend of the monastery of Tegernsee, South Germany, suggests that two brothers, named Adalbert and Otokar, founded the cloister approx. in 850 AD. During a recent reconstruction of the monastery church, we had the opportunity to investigate the skeletons of the two founders that have been buried within the cloister church. The two almost complete skeletons were easily identified as those of two male individuals of similar body stature reaching the considerable body height of 1.87 m and 1.85 m, resp. While one of the individuals reached advanced age (the determination of enamel rings suggests an age at death of more than 60 years) the other individual died at a significantly younger age (36 +/- 2 years). The thorough paleopathological investigation revealed in the younger individual an extensive destruction of the right maxillary sinus with infiltration of the lower orbita, destruction of the lateral nasal wall and the dorsal palate. This finding is very suggestive of a carcinoma of the maxillary sinus such as seen in present day populations with exposure to wood-dust. In addition, both individuals revealed multiple healed fractures of the ribs and the older man a healed fracture of the metacarpals I and II with callus formation. Since the determination of radiocarbon ages dates both individuals back to approx. AD 700 we assume that both are the veritable founders of the monastery which seems to have been built about 100 years earlier than as yet suggested.

Keywords: Tumor, Nasal pathology, Trauma

ORAL

PALEOETHNOBOTANY AT THE SITE OF DOS CABEZAS

Ryser, G.

Arizona State University, USA

sansouci_1@yahoo.com

Dietary variation and prehistoric human interaction with plants can be explored through pollen and macrobotanical analysis. At the site of Dos Cabezas in the Jequetepeque Valley on the north coast of Peru, preliminary studies suggest that the use of certain plants were for specific medicinal purposes. This paper explores several possibilities relating non-regional plant use in Moche I burials and the possibility that the plants were chosen for their medicinal properties.

Keywords: Peru, Paleoethnobotany

STUDY OF A HISTORICAL FAMOUS PERSON IN SPAIN. D. JUÁN HURADO DE MENDOZA Y LUJÁN. (MARQUÉS DE SANTILLANA)

Sánchez, J¹; Perea, B.¹; Rio, P. del¹; Prieto, J¹.

¹ Departamento de Medicina Legal, Facultad de Medicina, Universidad Complutense de Madrid,
SPAIN
jsanchez@med.ucm.es

We have carried out the study of the skeleton of D. Juan Hurtado de Mendoza y Lujan, deceased in 1535. All the signs in the skeleton are coincident regarding the date of death and sex, but there exists controversy about the age at death. We think that this disparity that exists in the long bones, with a very good calcification, is due to alimentary factors and lifestyle in that time.

Keywords: Historical, Spain, Lifestyle, Age

POSTER

HUMAN REMAINS IN THE LEE COLLECTION (JAMAICA): PATHOLOGICAL EVIDENCE

Santos, A.L.¹; Allsworth-Jones, P.²; Rodriques, E.³

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

² Department of History, The University of the West Indies, JAMAICA

³ Lee Project, Archaeological Laboratory, The University of the West Indies, JAMAICA

alsantos@ci.uc.pt

The Archaeology Laboratory in the History Department of UWI houses the James Lee Collection of Arawak artefacts and human remains. It consists mainly of surface findings, obtained from localities all over Jamaica between 1965 and 1986. A complete inventory and database is in preparation by two of the authors (PAJ and ER) as part of a project funded by the Jamaica bauxite industry acting through the intermediary of the Jamaica Bauxite Institute. From the anthropological point of view, more than 34 individuals, juveniles and adults, are represented. Taphonomy played an important role in the state of preservation of the bones. Despite that, whenever the state of preservation allowed, age and sex estimation, metric analyses, and pathological case descriptions were performed. Among the findings we would like to present two skulls (CC15 and EC12) artificially deformed with frontal flattening and parietal expansion, a cultural practice among the Arawak. CC15 (Taylor's Hut cave in Clarendon parish) is a secondary burial since it was found inside a bowl. At E12 (Black River) an increase in thickness in two fragments of tibiae (also visible in radiographs showing the breadth of the compact bone at the shafts) and in one fibula is regarded as a pathological condition, possibly related with treponemotosis. Signs of degenerative joint diseases, such as eburnation in an atlas and in a humerus, and osteoarthritis in several bones (humerus, ulna, and vertebrae), were detected at J1 (Hartfield) and JC7 (Spot Valley), an open air site and a cave respectively in St James parish. The last case described is an agenesis of a right primary decidual incisor in a mandible from a juvenile with an age around 4 years (Y4 Rio Nuevo St Mary parish).

This study was partially supported by a grant from the Vice-Chancellor of the University of the West Indies.

Keywords: Cranial deformation, Dental agenesis, Osteoarthritis, Taino/Arawak, Treponemotosis, Jamaica

POSTER

A POSSIBLE CASE OF TREPONEMATOSIS IN A TAINO/ARAWAK SKULL FROM JAMAICA

Santos, A.L.¹; Gardner, M.²; Allsworth-Jones, P.³

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

² Department of Anatomy, The University of the West Indies, JAMAICA

³ Department of History, The University of the West Indies, JAMAICA

alsantos@ci.uc.pt

James Lee, a professional geologist and amateur archaeologist active for many years in Jamaica, recorded in 1968 the finding of two human skulls, among other bones and teeth and pottery, in a cave he referred to as Bull Savannah #2 (EC12) in St Elizabeth parish. One of these skulls was presented to one of the authors (MG) for further scientific study, and is the subject of the current work. The remaining materials are part of the Lee Collection. This incomplete cranium has the vault and face very well preserved while the base is absent. This type of damage is common to other Arawak skulls, and should be related to the practice of secondary burial among the people. Another cultural feature is cranial deformation, visible in the form of a flattened forehead. This study consists of sex and age estimation, measurements, and pathological observations. There are lytic lesions in the frontal and both parietal bones. The margins of these lesions are rounded at the outer table, with evidence of healing, and slight pitting is evident on the affected areas. Radiological and CT examination shows that they spread throughout the diploe producing an irregular surface. Despite the absence of the rest of the skeleton, this individual seems to have been affected by treponemal diseases. The individual's chronology is not definitive yet because radiocarbon dating is in course. Some of the pottery was tentatively identified by Lee as Redware style, corresponding to the first human occupation of Jamaica before AD 1000, but there is no proof of association between it and the human remains. Independent of the still unresolved chronological question, this case is still an important contribution to the history of treponematosis in the Caribbean region.

Keywords: Taino/Arawak, Cranial deformation, Treponematosis, Jamaica

POSTER

STUDY OF A PROBABLE CASE OF POLIOMYELITIS (FLOR DA ROSA)

Santos, S.¹; Costa, C.¹; Almeida, P.¹

¹ Biological Anthropology Laboratory, Department of Biology, Évora University, PORTUGAL
soniandreiasantos@hotmail.com

This case reports to an adult male exhumed from a Portuguese medieval cemetery (Flor da Rosa - south of Portugal), that presents a length asymmetry of several long bones. This morphological alteration is analysed to conclude about a possible diagnostic of poliomyelitis.

Keywords: Medieval, Long bone asymmetry, Infectious diseases, Poliovirus(?)

**ANTHROPOLOGICAL AND PALEOPATHOLOGICAL INVESTIGATIONS IN THE MEDICINE
FACULTY LABORATORIES OF VARESE**Sassi, A.¹; Congiu, T.²¹ Università degli Studi dell'Insubria, Dipartimento di Medicina e Sanità Pubblica, Varese, ITALIA² Università degli Studi dell'Insubria, Laboratorio di Morfologia Umana "L. Cattaneo", Varese,
ITALIA

anna.sassi@tin.it

In the last few years, in the area of Varese, the Archaeological Survey of Lombardy made a lot of emergency interventions and found a high number of human remains. This is the motivation that induced the head of the Survey to start collaboration with the University of Insubria, in particular with the Institute of Legal Medicine, where "personal identification" is routinely studied. Once the basic anthropological examination was made, wishing to improve further the investigations, we decided to widen the collaboration to the Laboratory of Human Morphology of our University. As a first approach to human remains we used the medico-legal methodology, that allows the definition of parameters of general identification and finds out every macroscopic anatomical variation or abnormality. In case of multiple burials we can investigate the DNA profile to define the relationship among individuals. More details, with a range of magnification from panoramic to ultrastructural view (20-300000x), can be obtained by SEM analysis on hair, teeth and other tissues, as we did in the case of mummy found in Rimini. X-ray microanalysis was carried out on bones and on burial earth giving paleonutritional information. In this study we present some of the result obtained from this collaboration.

Keywords: Personal identification, SEM, Microanalysis, Italy

POSTER

A TEST OF HISTOLOGICAL METHODS OF DETERMINING THE CHRONOLOGY OF ACCENTUATED STRIAE IN DECIDUOUS TEETH

Saunders, S.¹; Fitzgerald, C.²; Bondioli, L.³; Macchiarelli, R.⁴

¹ Department of Anthropology, McMaster University, Ontario, CANADA

² Institute of Archaeology, University College, London, U.K

³ L. Pigorini National Museum of Prehistory and Ethnography, Rome, ITALY

⁴ Laboratoire de Géobiologie, Biochronologie et Paleontologie Humaine, Université de Poitiers,
FRANCE

saunders@mcmaster.ca

This study uses an approach based on the histology of normal dental growth to estimate the chronology of Wilson Bands (internal enamel defects or WB) in a large sample of deciduous teeth from an Imperial Roman necropolis. Samples of longitudinal thin sections of matched within-individual tooth pairs were examined microscopically in order to detect WBs according to established criteria. Matching WBs across teeth was accomplished using photomontages. The chronology of WB occurrences was determined independently from the assessment of WB prevalence by calculating average cross striation repeat intervals along enamel prisms and the distance of individual bands from the neonatal line. Two independent observers calculated band chronologies. Results show an extremely high correlation between the independently determined ages of bands matched across teeth and demonstrate that the technique is highly specific and valuable for the age determination of defects.

Keywords: Accentuated striae, Wilson bands, Chronology, Deciduous teeth, Microstructural growth markers

POSTER

CHANGES IN TRABECULAR BONE STRUCTURE IN RICKETS AND OSTEOMALACIA - THE POTENTIAL OF A MEDICO-HISTORICAL COLLECTION

Schamall, D.³; Teschler-Nicola, M.¹; Kainberger, F.²; Tangl, S.³; Brandstätter, F.⁴; Patzak, B.⁵; Plenk, H.³

¹ Abteilung Archäologische Biologie und Anthropologie, NHM Wien, AUSTRIA

² Klinische Abteilung für Osteologie, Univers. für Radiodiagnostik, AKH Wien, AUSTRIA

³ Labor für Biomaterial und Stützgewebeforschung, Histologisch Embryologisches Institut, Universität Wien, AUSTRIA

⁴ Mineralogische Abteilung, NHM Wien, AUSTRIA

⁵ Pathologisch-Anatomisches Bundesmuseum, Wien, AUSTRIA

doris.schamall@nhm-wien.ac.at

In this study lumbar vertebral bodies with disturbed mineralization and without known bone disease from 19th century (housed in the Federal Museum for Pathological Anatomy, Vienna) were investigated. We used macerated, partly dissected or fluid conserved skeletal preparations from 61 individuals with known age and gender. The specimens of 37 individuals had gross pathologic alterations caused by rickets and osteomalacia. The specimens from 24 individuals without known bone disease served as age-matched controls. Bone structure and mineralization in all specimens were evaluated by non-invasive techniques (conventional radiographs and computerised tomography; 13 specimens were also analysed by quantitative CT and DEXA). In 13 cases invasive techniques were applied (light and scanning electron microscopy [BSE- and SE-mode] of surface-stained and carbon-sputtered undecalcified histological ground sections). Their corresponding microradiographs were also used for computer-assisted morphometry. Using these methods, the initial diagnoses of disturbed mineralization (recorded in the protocol) could be mostly confirmed, but also disproved in some cases. The clinically established determination of bone mineral densities (BMD) by quantitative CT and DEXA failed in these specimens, but all other non-invasive and invasive techniques could be successfully applied and yielded correlating results of radiological changes and histomorphometric parameters. Compared to vertebral bodies without known bone disease, in rachitic vertebrae volume density (BV/TV) and numbers of trabeculae (Tb.N) were increased, while in osteomalacic vertebrae those parameters were decreased. Accordingly, surface densities (Sv) and specific surfaces (S/V) were reduced, suggesting increased bone resorption. In conclusion, establishing such techniques and standards could be useful for the diagnosis of disturbed mineralization in clinical patients.

Keywords: Trabecular bone structure, Histomorphometry, Rickets/Osteomalacia

POSTER

ANCIENT BONES: A TREASURE CHEST OF INTACT EXTRACELLULAR MATRIX PROTEINS

Schmidt-Schultz, T.¹; Schultz, M.²

¹ Zentrum Biochemie, Göttingen, GERMANY

² Zentrum Anatomie, Göttingen, GERMANY

mschult1@gwdg.de

The protein pattern in the bone matrix of prehistoric and historic specimens was examined. The small samples were taken from individuals grouped in different age classes including the subadult age. The proteins were extracted from bone matrix and after solubilization and precipitation separated electrophoretically, using SDS-PAGE (Poly-Acrylamide-Gel-Electrophoresis). The first step in identifying proteins in ancient bones is to control microscopically the preservation of organic and inorganic bone structures by viewing thin ground sections in plane and polarized light. Thus, contamination and destruction caused by decomposition and diagenesis can be estimated reliably. For this study, only bone samples characterized by an excellent preservation state were used. It is striking that there are different protein patterns in these subadult groups which are probably related to the different stages of growth.

Keywords: Biochemistry, Ancient bone proteins, Proteomic

ORAL

DISEASES DURING INFANCY AND CHILDHOOD IN THE BRONZE AGE

Schultz, M.¹; Schmidt-Schultz, T.²

¹ Zentrum Anatomie, Göttingen, GERMANY

² Zentrum Biochemie, Göttingen, GERMANY

mschult1@gwdg.de

In this contribution, emphasis is laid on the comparative etiology and epidemiology of diseases of infancy and childhood in Bronze Age populations using disease profiles. As there are characteristic vestiges of diseases at the micro-level which act as guiding symptoms, the nature of many diseases can be reliably diagnosed. There are also some groups of diseases such as meningeal irritations which characterize the health situation and the living conditions of subadult populations very reliably. Thus, the health situation of past populations can be calculated using these parameters. Furthermore, stress indicators, for instance, porotic changes of external bone surfaces such as porotic hyperostosis of the skull vault and the orbital roof, and periosteal newly built bone formations on the shafts of long bones suspicious of periostitis and periostosis, can be used for comparative investigations. In particular, the results dealing with the health situation of Bronze Age populations from Lower Austria, Slovakia, Anatolia and Egypt are discussed.

Keywords: Diseases of infancy and childhood, Bronze Age, Etiology, Epidemiology

ORAL

A NEOLITHIC SKULL LESION PROBABLY CAUSED BY AN ARROWHEAD

Silva, A.M.

Departamento de Antropologia, Universidade de Coimbra, PORTUGAL

amgsilva@ci.uc.pt

A frontal bone exhumed from the collective burial of the Dólmen Ansião (Portugal), dated to the end of the Neolithic, presented on his left side, behind the orbit, a healed injury probably caused by an arrowhead. The projectile would have struck the adult individual of unknown sex, from behind, with the arrow tip leading to the complete perforation of the cranial bone. No signs of infection or any other kind of complication are visible. The data do not allow us to determine if this lesion resulted from a war injury or a hunting accident. In case of confirmation of an arrow wound, it would be the first one for a prehistoric Portuguese site.

Keywords: Arrow wound, Collective burial, Late Neolithic, Portugal

POSTER

AN INDIVIDUAL CASE OF MULTIPLE TRAUMA FROM FREIXO (PORTUGAL)

Silva, C.

BioAnthropos, Lda., Instituto Pedro Nunes, Coimbra, PORTUGAL

carlinhaesilva@hotmail.com

A young adult male (20 - 24 years of age at the time of death), exhumed from an archaeological site in Freixo (Marco de Canaveses, Portugal), revealed several indicators of traumatic injuries. Fractured ribs exhibiting different stages of healing, as well as a ligament ossification in the left scapula, are to be mentioned. This individual also presents some indicators of bone reactions, in both upper and lower limbs, probably due to an infectious pathology. Other aetiologies for these lesions will also be discussed.

Keywords: Trauma, Infection, Healing

POSTER

AN OCCUPATIONAL MARKER OF HUMAN ACTIVITY. A CASE REPORT FROM ARRENTELA (PORTUGAL)

Silva, C.¹; Cardoso, F.¹; Tavares, T.¹

¹ BioAnthropos Lda., Instituto Pedro Nunes, Coimbra, PORTUGAL
carlatsilva@hotmail.com

It is commonly known that specific modification of osseous tissue can provide an insight into a wide range of activity patterns. In an archaeological series from Arrentela (Portugal) a specific pattern of muscular development was found. It concerns an enthesopathic lesion localized in the proximal third of the humerus where the *teres major* and *pectoralis major* muscles insert. From a total of 40 humeri that permitted the analysis, 75% exhibit this pattern of muscular development. This lesion is referred to as an indicator of habitual activities involving abduction and adduction of the arm. Biocultural and biomechanical perspectives are discussed in this paper.

Keywords: Occupational markers, Humerus, Biomechanics

POSTER

MENINGIOMA PROBABLE REASON OF TREPHINATION

Smrcka, V.^{1,2}; Kuzelka, V.³; Melkova, J.⁴

¹ Postgraduate Medical School and Department of Plastic Surgery, 1st Medical Faculty of Charles University, Prague, CZECH REPUBLIC

² Centre for Patients with Locomotor Defects, Prague, CZECH REPUBLIC

³ Department of Anthropology, National Museum Prague, CZECH REPUBLIC

⁴ Department of Hydrogeology, Faculty of Natural Sciences of Charles University, Prague, CZECH REPUBLIC

smrcka.v@quick.cz

The incomplete human skull with a trephined hole in the right frontal zone was identified in 1997 among the collection of objects in the Municipal Museum in Sedlcany by prof. J. Pav, curator of the museum and the first author. The calva of Sedlcany was dated back to period 1298 – 1550 (14C calibrated age is 528 +/- 126 yr BP). Smooth edges of the entire hole witness its healing. We can distinguish the application of three operation techniques in the trephined hole on the right-hand side of the frontal zone of the calvarium of a man 50-60 y.o., or older. “Grooving” remained visible mainly in the lower half of the trephined hole above the eye socket. Four tiny semicircular incisions from the upper edge of the hole probably represent the traces of “drilling” technique. Thinning of the wall in the upper part of the hole was evidently caused by the “scraping” technique. The medical reason for the trephination in relation to a symptomatic set of increased intracranial pressure caused by dextral parasagittal meningioma, is explained by an imprint of the arteria meningicae mediae, the groove for the right arteria meningica media is deeper and wider than that on the left-hand side. A complex of the widened groove of the central arteria meningica media, related to a cavity for a large Pacchionian granulation situated along the sagittal sinus and completed by vascularisation of diploe with three 1-mm inlets of vessels and with a zone of condensation visible in the X-ray picture are bone symptoms of meningioma. Analogous features present in the Sedlcany calvarium were described by Campillo (1977) in the skull No. 3 from “Bobila Maduerell” (Saint Quirze de Galliners, Barcelona) and in the skull No. 2-3 from “Son Real” (Mallorca).

Keywords: Trephination, Parasagittal meningioma

POSTER

DISEASES OF THE POPULATIONS FROM THE MIGRATION PERIOD

Smrcka, V.^{1,2}; Svenssonová, M.³

¹ Postgraduate Medical School and Department of Plastic Surgery, 1st Medical Faculty of Charles University, Prague, CZECH REPUBLIC

² Centre for Patients with Locomotor Defects, Prague, CZECH REPUBLIC

³ Department of Anthropology, Faculty of Natural Sciences, Masaryk University, Brno, CZECH REPUBLIC

smrcka.v@quick.cz

Compact bone of the femora from six Moravian burial grounds of Germanic populations dated from the Migration period, was analysed for content of lead as a cultural factor and from a health point of view. The exposure was by an order lower than that from the Roman period, being on average below 3 µg Pb/g of bone tissue. Content of zinc of migrating Germanic populations in the region of the middle Danube are lower than those from the original settlements. Congenital deformities of teeth and the axial skeleton appeared locally in the Langobards, probably influenced by the local conditions. Excessive loading of the respective groups of muscles stressed the bone edges on the fringe of the hip bone as well as those on the bones of the lower and upper extremities. The causes of these changes, including traumatic influences, are being analysed.

Keywords: Diseases, Migration period

ORAL

RIB PERIOSTEAL REACTIONS IN SKELETONS FROM ATACAMA, CHILE: TUBERCULOSIS

Souza, S.

Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, BRAZIL
sferraz@ensp.fiocruz.br

Periosteal reactions at the inner face of the ribs are considered a good indicator for pulmonary tuberculosis. 129 prehistoric skeletons from Solcor 3 and 68 from Quitar 6, Atacama, Chile, most of them adults from different periods had the ribs carefully examined. Lesions could be unilateral or bilateral, half of the skeletons had active lesions at the time of the death, most of them were at the posterior arches. At the last cultural period the number of affected ribs per individual was higher, the lesions were at the lower ribs and the persons affected were younger. Positive association with vertebral lesions, sought in one third of the sample, reinforces the hypothesis of tuberculosis. Tuberculosis is present at the desert for at least two millennia. Cultural changes and pathologic data suggest that in São Pedro de Atacama BK could be more prevalent in Quitar 6 period.

Keywords: Periostitis, Tuberculosis, Atacama, Chile

ORAL

LOUSE INFECTION IN SHRUNKEN HEADS

Souza, S.¹; Gonçalves, M.¹; Rick, F.¹; Reinhard, K.²; Ferreira, L.¹; Nascimento, F.³;
Araújo, A.¹

¹ Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, BRAZIL

² School of Natural Resource Sciences, University of Nebraska, Lincoln, Nebraska, USA

³ Museu Nacional da UFRJ, Rio de Janeiro, BRAZIL

sferraz@ensp.fiocruz.br

We report *Pediculus humanus* (Anoplura) eggs in shrunken heads from South America. The heads were shrunken by the Jivaros, headhunter Indians from tropical rainforest of the Amazon region. Six heads belonging to the National Museum of Rio de Janeiro, Brazil, were examined in search of louse eggs and adult forms. Five heads are of South American Indians. The other one has long red hair and moustache. They are supposed to be at least 113 years old. Some hair shafts still having cemented louse eggs were cut off to be examined under microscope. Eggs were found in five heads, including the one with red hair, ranging from a low to a heavy parasitic load. The Jivaros used to cut off and preserve the head of enemies as a talisman. Shrinking process involved the separation of the skin and soft tissues from the skull followed by several days decoction in an herb infusion. Eventually the head turn to the size of a small monkey, roughly 1/3 of the original size. The shrinking process seems not to change the *Pediculus* egg original architecture. Well preserved Anoplura eggs and adults have been found in mummies and sediment recovered from skeletons throughout the world. The oldest louse finding was that from Brazilian Northeast dated of 10,640 years. Lice infection seems to have been a common infection since ancient times. The infection is believed to be originated in African prehomínids, and introduced into the New World with the first human migrations.

Keywords: Paleoparasitology, Ancient diseases, Mummies, Lice, Jivaros, Anoplura

POSTER

SKULL NECROSIS: ARTIFICIAL DEFORMATION?

Souza, S.¹; Reinhard, K.²; Lessa, A.¹

¹ Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, BRAZIL

² School of Natural Resource Sciences, University of Nebraska, Lincoln, Nebraska, USA

sferraz@ensp.fiocruz.br

A small Inca mummy from a tomb of the Chillón river, Peru, has been recently analysed in National Museum collection. The bundle was brought at the beginning of the century with few information of context. Scanning investigation of the pack revealed the skeleton of a child less than one year, many layers of wrapping and small objects. The mummy was partially destroyed and the wrappings could be opened, the process of packing reconstructed, some burial gifts recovered, samples for pollen, microresidues and paleoparasitology collected, and the skeleton and teeth analysed. The skull bones at the CT shown thick abnormal layers, their direct examination revealed a central necrotic perforation in a flattened area of the occipital squamae. Periosteal reactions along the lambda suture in both the occipital and parietals, reinforce the hypothesis of trauma by artificial compression of the skull. Minor bone reactions suggest the extension of to the inner part of the skull and other bones. Although it is not very common, this consequence of cranial deformation has been previously described in South America, and must not be misinterpreted by other porotic calf reactions.

Keywords: Trauma, Cranial deformation, Peru, Inca, Mummy

ORAL

**PALAEOPATHOLOGY OF IUFEE AND PERSONS FOUND BESIDES HIS SHAFT - TOMB AT ABUSIR
(EGYPT)**

Strouhal, E.

Institute for the History of Medicine and Foreign Languages, Prague, CZECH REPUBLIC

strouhal@lf1.cuni.cz

Pathological changes of the priest and administrator of (Royal) palaces Iufaa are compared with those revealed on skeletons of his two relatives (sister Imakhetcherresnet and a male Nekawer, who could have been their father), and another unrelated male Padihor found recently in the vicinity of Iufaa's monumental tomb, unmolested by robbers. Congenital anomalies, degenerative - productive changes, post-traumatic changes, first palaeopathological evidence of a rare benign neoplasma (neurilemmona) and rich dento-alveolar pathology have been recorded. These findings add important facts to the life stories of these historical persons, dating from beginning of 27th Dynasty (525-404 B.C.)

Keywords: Palaeopathology of bones and remains of soft tissues, Tomb of Iuffa, End 26th dynasty, Abusir (Egypt)

ORAL

PALEOSTOMATOLOGICAL DATABASE OF THE CONQUERING PERIOD HUNGARIANSSzikossy, I.¹; Bernert, Z.¹¹ Hungarian Natural History Museum, Department of Anthropology, Budapest, HUNGARY
szikossy@antr.nhmus.hu

Well documented, standardized examination methods are very important in the historical anthropology as well as in any biological sciences. Anthropological data of the cemeteries can be compared on the basis of measurements of long bones and crania (Martin, 1957). Teeth are studied by many ways by a number of authors. However, the different methods do not allow reliable comparison of individuals, populations and historical ages. The standardization of the stomatological data-recording methods was the aim of our study. Prevalence, frequencies of caries, cysta/abscessus, calculus, enamel hypoplasia and abrasion were examined. The standardized method was tested on the population of Kereki-Homokbánya from the Avar period, as a reference population. Database was made applying the Microsoft Excel 97 software, which is suitable for storing and calculating of the oral pathological data. The program summarizes the data and makes distribution by sex and individual age of the series. This project was started with the data of the Conquering Period (10th century). 624 skeletons of 71 cemeteries were examined. A total of 450 individuals were suitable for oral pathological analysis. 5898 teeth were detected and pooled into the database. The database is open for the scientific community at the Department of Anthropology, Hungarian Natural History Museum.

Keywords: Paleostomatology, Oral pathology, Database, Conquering period Hungarians, Standardized examination method

ORAL

BETA-THALASSAEMIA IN THE PREHISTORIC EASTERN MEDITERRANEAN: DIAGNOSIS IN ANCIENT BONES

Tadmouri, G.¹; Basak, A.²; Ozbal, H.³; Özbek, M.⁴; Erdal, C.⁴; Chataignier, Y.⁵; Zahed, L.⁶; Le Mort, F.⁵; Perrin, P.⁷

¹ Fatih University, Department of Biology, Istanbul, TURKEY

² Bogazici University, Department of Molecular Biology & Genetics, Istanbul, TURKEY

³ Bogazici University, Department of Chemistry, Istanbul, TURKEY

⁴ Hacettepe University, Department of Anthropology, Ankara, TURKEY

⁵ GREMMO, UMR 5647, Maison de l'Orient Méditerranéen, Lyon, FRANCE

⁶ The American University of Beirut, Laboratory of Cytogenetics, Beirut, LEBANON

⁷ CGMC UMR 5534, Université Claude Bernard, Lyon I, FRANCE

tadmouri@hotmail.com

The recent development of new PCR-based techniques to analyze genetic markers in ancient DNA (aDNA) gave a fresh impetus to the exploration of ancient human history. A β -thalassaemia mutation, named IVS-I-110, affecting the first non-coding region of the β -globin gene, is a very frequent allele in the Mediterranean basin and displays an East/West gradient. The systematic analysis of the highly polymorphic sequence 5' to the β -globin gene helps in tracing the origin and spread of this mutation. Available data extracted from modern human DNA sequences indicate that fixation of this old β -thalassaemia mutation may have occurred in Anatolia/Levant 9,000-10,000 years ago. In order to accurately localize the geographical and chronological origin of this mutation, we aimed at collecting ancient human bone samples from a large variety of Anatolian and North Levantine Neolithic/post-Neolithic sites to be studied using aDNA techniques. Diseases of the haematopoietic system are known to affect normal bone development. Skeletal remains with pathology suggestive of either sickle cell disease or thalassaemia were discovered in different prehistoric sites of the concerned area. Samples are preferably collected from individuals showing such pathological conditions. Palaeoanthropological and paleopathological data collected with human bone samples are used for building a database that will be soon in free access.

Keywords: Ancient DNA, Mediterranean, Molecular analysis, Archeology, Anatolia, Paleopathology

POSTER

"TREPHINATION" FOLLOWING SHARP SKULL TRAUMA IN LATE ROMAN TRIER/AUGUSTA TREVERORUM (GERMANY): A CT INVESTIGATION

Teegen, W.-R.¹; Henke, D.²

¹ Historisches Seminar, Universität Leipzig, GERMANY

² Radiologist, Trier, GERMANY

teegen@rz.uni-leipzig.de

The calvarium of a young adult male from the late Roman cemetery at St. Maximin at Trier/Augusta Treverorum showed a large opening on the left side. It was studied from a paleopathological point of view. Macroscopic, microscopic and computer tomographical techniques were applied. Age and sex determination followed the guidelines of the European Association of Anthropologists (1980). Pathological alterations were scored according to Schultz (1988). Measurements were taken according to Bräuer (1988). The CT was carried out with the CT scanner CT-Tomoscan E-MG by Philips Medical Systems. The skull was scanned in 5 mm slices. The perforation of the skull belonged to a sharp trauma (e.g. sword cut), the rims of the opening were cleaned, probably by an ancient surgeon. A severe inflammation, most likely connected with the trauma caused a destructive otitis media and mastoiditis. However, it was survived for some time.

Keywords: Trauma, Trephination, Otitis media, Mastoiditis

POSTER

PALEOPATHOLOGICAL INVESTIGATION OF AN EARLY MEDIEVAL POPULATION FROM HÖXTER (WESTPHALIA, GERMANY)

Teegen, W.-R.¹; Schultz, M.²

¹ Historisches Seminar, Universität Leipzig, GERMANY

² Zentrum Anatomie, Göttingen, GERMANY

teegen@rz.uni-leipzig.de

In the early medieval cemetery from Höxter-St. Kilian (Westphalia, Germany) 25 tombs were excavated. Stray finds from at least 25 other individuals were found. Children are mainly underestimated, in particular below 12 months of age. A children deficit of approx. 22 individuals has to be considered. The skeletal material was studied from an anthropological (sex, age, measurements according to Ferembach et al. 1980) and palaeopathological point of view (according to Schultz 1988), using macroscopic, radiological and microscopic techniques. Pathological processes of the paranasal sinuses, teeth and jaws were common. A high degree of linear transverse enamel hypoplasias was observed: 15 out of 18 individuals showed these stress markers. They mainly developed around 3 years of age. One female possibly showed traces of tooth pick (Teegen/Schultz 2002). *Cribra orbitalia* and *Cribra cranii* were completely missing. Only one suspicion for scurvy was found. Degenerative joint diseases (DJD) of the large joints and the vertebrae were also common. Mainly affected were the hip and shoulder joints, followed by the other joints of the lower extremity. 12 out of 32 adults (37.5%) showed traumatic injuries. Only one skull trauma was present and 6 (in part multiple) rib fractures. One case of a shipper fracture was found. The DJD and the shipper fracture are indicating a heavy load of physical work for both sexes. The distribution of the degenerative changes, in particular of the hip and shoulder joints, are typical for prehistoric and historic agriculturalists. Alterations of the lamina interna were quite rare. All findings are indicating a relative good status of health - contrasting the high percentage of linear transverse enamel hypoplasia of around 82%. Its causes were remaining unclear.

Keywords: Dental disease, Fractures, Degenerative diseases, Middle ages

ORAL

THE QAFZEH 11 ADOLESCENT: A CASE OF OTITIS MEDIA IN THE LEVANTINE MIDDLE PALEOLITHIC

Tillier, A.-M.¹; Arensburg, B.²; Duday, H.¹

¹ Laboratoire d'Anthropologie des populations du passé, Université Bordeaux 1, FRANCE

² Department of Anatomy and Anthropology, Sackler School of Medicine, Tel Aviv University, ISRAEL

am.tillier@anthropologie.u-bordeaux.fr

The immature human remains discovered in the Mousterian layers of Qafzeh cave, dated to ca. 95.000 years BP, remain today one of the richest samples ever recovered from this time period. The non-adult individuals represent a diversity of developmental ages from birth to adolescence. The skull of the oldest individual, Qafzeh 11, ca. 13 yrs old at death, manifests some outstanding skeletal abnormalities indicating that this adolescent experienced various degrees of bone lesions. The aspect of the left temporal bone (eg. the opening of the mastoid cells) and the identification of *ante mortem* erosion on two of the ear ossicles (the malleus and incus) suggest the occurrence of an inflammatory disorder in the ear during life. Several arguments support the diagnosis of chronic otitis media in the Qafzeh 11 adolescent. The archeological record of ear infection is extremely poor among prehistoric populations and the case presented here is unique within the Middle Paleolithic hominid sample. Such an inflammatory ear disorder is compatible with life and the Levantine Mousterian specimen suffered from other traumatic lesions.

Keywords: Qafzeh, Middle Paleolithic, Otitis media, Adolescent, Levant

ORAL

TOES OF ATLAS, A YOUNG MOCHE GIANT

Tyson, R.

San Diego Museum of Man & University of San Diego, California, USA

rtyson@museumofman.org

In the field season of year 2000, two additional Moche giants were excavated from the Dos Cabezas site on the north coast of Peru. Under tomb 2 was the extended burial of a 15-18 year-old male, later named Atlas. He is the youngest of the five Moche giants. Radiographs revealed advanced closure of his epiphyses. One of his unusual characteristics is the condition of the proximal row of foot phalanges, with their thinned diaphyses and flared metaphyses. The diaphyses of the eight phalanges of rays 2-5 measure 3-4 mm at the least transverse diameter, approximately half the diameter of normal phalanges of similar lengths. Phalanges of the left side have complete distal articulations, while those of the right are deformed and remodelled. Their articulating, intermediate phalanges are missing. Possible causes include trauma, resorption, or early degenerative changes.

Keywords: Giant, Moche, Peru, Foot, Phalanges

SOME DOUBTFUL PATHOLOGICAL CONDITIONS RETRIEVED ON THE PORTUGUESE MEDIAEVAL NECROPOLIS OF SANTA MARIA (SINTRA)

Umbelino, C.¹; Wasterlain, S.¹

¹ Departamento de Antropologia, Universidade de Coimbra, PORTUGAL
umbelino@ci.uc.pt

From the anthropological analysis performed on the human skeletal remains retrieved from the Portuguese Mediaeval Necropolis of Santa Maria (Sintra, near Lisbon), dated from the 14th to 17th centuries, several pathological cases were detected. In the present study will be presented, for a more profound discussion, seven cases where an accurate diagnosis was difficult to achieve. Four of them consist of exostosis observed in femurs and tibiae, one respects to a fibula with evident radiological changes, other to a scapula covered with massive reactive bone, and the last one concerns a humerus which head is completely deformed, with formation of osteophytes and signs of intense porosity. In all cases, differential diagnoses are advanced with the purpose of achieving a more faithful diagnosis.

Keywords: Exostosis, Reactive bone, Bone deformation

POSTER

**THE NATURAL MUMMIES OF POPOLI. A NEW SITE IN THE INNER ABRUZZO REGION
(CENTRAL ITALY)**

Ventura, L.¹; Leocata, P.¹; Beckett, R.²; Conlogue, G.²; Sindici, G.³; Calabrese, A.³; Di
Giandomenico, V.³; Fornaciari, G.⁴

¹ Department of Pathology, City Hospital of L'Aquila, L'Aquila, ITALY

² Bioanthropology Research Institute, Quinnipiac University, USA

³ Departments of Pathology and Radiology, City Hospital of Popoli, ITALY

⁴ Dep. of Oncology, Section of Palaeopathology, University of Pisa, ITALY

luca.ventura@tin.it

The church of the Holy Trinity in Popoli (province of Pescara, Central Italy) was set up in 1500 by a local congregation and subsequently (1734 AD) rebuilt in the actual form after an earthquake. At least 8 mummified and partially skeletonized bodies are buried in a crypt beneath the church, together with additional human bone remains. The chronological dates of the mummies range from 1734 to 1845, when the cemetery was established. A preliminary investigation of the crypt took place last year and was documented by the National Geographic as a part of "The Mummy Road Show". The paleopathologic study of a mummified nobleman from this series was also performed. X-ray in the crypt with Polaroid film disclosed an artifact, which helped date the individual at the time of death to be the early 1800's. Initial paleopathologic data were obtained using Polaroid x-ray and videoendoscopy. Data was confirmed with CT scanning. Tissue biopsies were taken from the thoracic diaphragm and left kidney with histologic, microscopic, and X-ray diffraction studies conducted. Paleopathologic findings include poor dentition, pulmonary pathology with diaphragmatic involvement, and a kidney stone removed for analysis using radiographic localization and endoscopic guided extraction. The recovery and further investigation of these human remains, along with their clothes and ornaments, will offer the opportunity to trace an anthropologic and paleopathologic profile of this small community.

Keywords: Mummies, Paleopathology, Modern Age, Abruzzo

ORAL

PALEOPATHOLOGIC STUDIES IN THE INNER ABRUZZO REGION (CENTRAL ITALY)

Ventura, L.¹; Leocata, P.¹; Mancinelli, D.²; Miranda, G.²; Ventura, T.¹

¹ Department of Pathology, City Hospital of L'Aquila, L'Aquila, ITALY

² Department of Environmental Sciences, University of L'Aquila, L'Aquila, ITALY

luca.ventura@tin.it

The inner Abruzzo region represents a land of mountains and highlands with cold, dry climate. In recent years we started a systematic search of human remains in this area, in order to trace a map of the paleopathologic material. Starting from the western borders of the region, we investigated the skeletal remains from the burials of Santa Maria delle Grazie in Luco dei Marsi, belonged to a rural population of the XV-XVI century. Similar remains, found in San Potito di Ovindoli (XIIIth century) and Scurcola Marsicana (XIVth century) will make us able to trace a profile of the medieval population of this particular area. The necropolis of Fossa gave the bone remains of 560 individuals and represents with the necropolis of Bazzano (about 800 individuals) the largest collection of the first millenium BC in our land. Paleopathologic study of these remains is in progress. After the investigation of 4 XIXth century natural mummies found in Goriano Valli, we also started the recovery of the human remains in the church of San Sebastiano in Navelli, featuring hundreds of skeletonized and mummified bodies ranging from XVIth to XIXth century, and in the church of the Holy Trinity in Popoli, including at least 8 mummified bodies dating back to the XVIIIth century. Other interesting series and remarkable figures, held in L'Aquila and to date not still investigated, are also of interest for future studies. The cultural heritage represented by so many subjects gives the opportunity to consider our land of great paleopathologic interest.

Keywords: Mummies, Paleopathology, Abruzzo

POSTER

A WESTERN HEMISPHERE PERSPECTIVE ON THE HISTORY OF VIOLENCE

Walker, P.¹; Steckel, R.²

¹ Department of Anthropology, University of California, USA

² Department of Economics, Ohio State University, Columbus, USA

pwalker@anth.ucsb.edu

The effects that European contact has on the patterns of violence and warfare among Native Americans are a matter of considerable debate. Some argue that Native Americans were relative peaceful and non-violent before their societies were disrupted by the introduction of firearms and epidemic diseases. Others note the considerable amount of osteological evidence for pre-Columbian violence, which suggests that at least in some pre-Columbian populations, warfare and interpersonal violence was in fact prevalent. The Health and Nutrition in the Western Hemisphere database provides empirical data that bears directly on this issue. The project participants recorded standardized information of suite of health related skeletal indicators, including skeletal injuries. These data allow us to directly assess changes in the incidence and pattern of trauma associated with the arrival of Europeans in the New World. The Native American sample consists of data on 3375 pre-Columbian and 1165 post-Columbian individuals. Injuries were significantly more frequent in males (14.70%) than in females (10.45%). Traumatic injuries were present in 11.05% (n=373) pre-Columbian 16.91% (n=197) post-Columbian individuals. The higher frequency of trauma during post-Columbian times is highly significant statistically ($O^2 = 27.1$, $p = <0.0001$). This difference between periods is explained almost entirely by a markedly higher ($p = 10.60$, $p = 0.001$) injury rate among males (19.38%) during post-Columbian than during the pre-Columbian (13.04%). Female injury rates, in contrast, do not increase significantly during the post-Columbian period (11.70% vs. 9.97%, $p = 1.26$, $p = 0.26$). Much of the increase in trauma during the post-Columbian period can be attributed to a relatively high frequency of cranial trauma in post-Columbian males. These data suggest that significant differences in patterns of violence were associated with the arrival of Europeans in the New World.

Keywords: Trauma, Western hemisphere, Bioarchaeology, Violence, Health

ORAL

A NEW FIND OF AN ARTIFICIALLY DEFORMED SKULL IN AUSTRIA

Wiltschke-Schrotta, K.¹; Berner, M.¹; Pany, D.¹

¹ Department of Archaeological Biology and Anthropology, Natural History Museum, Vienna,
AUSTRIA
karin.wiltschke@nhm-wien.ac.at

Artificially deformed skulls were probably a sign of beauty and of fashion during the 5th century AD. This type of body deformation may have been introduced to Middle Europe by the Huns or Goths invading from the east. In Austria the finding of skeletons with intentionally deformed skulls are still rare and each single case is worthy of presentation. In this paper a new find from Schwarzenbach (Lower Austria) will be presented. ¹⁴C analysis dates this child from 380 to 440 AD. The burial site - a single grave carved in stone on a hilltop without any grave goods - is somewhat curious. The skeleton of the 4-year-old child is well preserved. The technique of skull deformation applied to this child is similar to all the other deformed skulls found during this period in Austria and takes the form of a circular bandage. Besides the treatment to the skull, the skeleton of this child shows various pathological changes distinguishable as multiple periosteal reactions on the long bones. These widespread signs of sickness may indicate that this little child had been sick for some time before it died.

Keywords: Skull deformation, Early middle age

POSTER

MOLECULAR STUDY ON HUMAN TUBERCULOSIS IN CONTEMPORARY TISSUE SAMPLES AND TIME DELINEATED POPULATIONS FROM ANCIENT EGYPT

Zink, A.¹; Grabner, W.¹; Nerlich, A.¹

¹Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY
Albert.Zink@lrz.uni-muenchen.de

We describe the molecular identification of the *M. tuberculosis* complex DNA in bone tissue samples from recent and historic populations. We used archival paraffin material from vertebral bodies of 12 recent cases obtained at autopsy with clinically proven tuberculosis and 12 further cases without tuberculosis. While 8 out of the TB cases revealed a specific mycobacterial amplification product, none of the controls was positive. Interestingly, one case with tuberculose sepsis (Landouzy sepsis), 4 of 5 cases with tuberculose spread beyond the primarily affected organ (i.e. lymph node or miliar involvement), but also 2 of 6 cases with restricted pulmonary tuberculosis reacted positive in the vertebral specimens. Furthermore, 83 ancient Egypt samples were obtained from the predynastic to early dynastic necropolis of Abydos (7 individuals, c. 3500 – 2650 BC), from a “Middle Kingdom” tomb of the necropolis of Thebes-West (37, c. 2100 – 1550 BC) and from five further Theban tombs used in the “New Kingdom” and the “Late Period” (39, c. 1450 – 500 BC). Out of the 9 cases presented with typical macromorphological signs of tuberculose spondylitis 6 were positive for mycobacterial aDNA (66.7%). From 24 cases with non-specific pathological alterations 5 provided a positive result (20.8%). In 50 cases of normally appearing vertebral bones 7 were tested positive (14.0%). There were only minor differences in the frequencies between the three populations. This indicates that the molecular analysis can detect mycobacteria even in unremarkable bone tissue proofing that organ tuberculosis is present. In addition, the extent of spread is of high significance for the frequency of positive reactions. The relatively high frequency of aDNA amplifications in unremarkable bone is well explained by our analysis of the recent material. Thereby, our data form an important basis for the investigation of tuberculosis frequency and spread in historic periods of time.

Keywords: Skeletal tuberculosis, Septic spread, PCR, Mycobacterial DNA, Ancient DNA

POSTER

MOLECULAR IDENTIFICATION AND CHARACTERIZATION OF *MYCOBACTERIUM TUBERCULOSIS* COMPLEX IN ANCIENT EGYPTIAN MUMMIES

Zink, A.¹; Sola, C.²; Reischl, U.³; Grabner, W.¹; Rastogi, N.²; Wolf, H.³; Nerlich, A.¹

¹ Division of Paleopathology, Institute of Pathology, Academic Teaching Hospital, München-Bogenhausen, München, GERMANY

² Unité de la Tuberculose et de Mycobactéries, Institute Pasteur, Pointe-à-Pitre, GUADALOUPE

³ Institute of Medical Microbiology and Hygiene, University Regensburg, GERMANY

Albert.Zink@lrz.uni-muenchen.de

A considerable number of molecular studies have provided evidence for the presence of *M.tuberculosis* complex DNA in ancient skeletal and mummified material. Moreover first studies on the differentiation of sub-types of the *M. tuberculosis* complex (*M. tuberculosis*, *M. bovis*, *M. africanum*, *M. microti*, *M. canettii*) have successfully been performed on ancient tissue samples. In our recent study we analyzed bone and soft tissue samples from 85 ancient Egyptian mummies from different tomb complexes in Thebes West, which were built and used between the Middle and New Kingdom until the Late Period (c. 2050BC – 500BC). The samples were tested for the presence of *Mycobacterium tuberculosis* complex DNA and further identified by spoligotyping. 25 samples provided molecular evidence for the presence of ancient mycobacterial DNA by amplification of a 123bp fragment of the repetitive element IS6110. The samples were further tested for the identification of subspecies by different PCR methods, but this failed due to lack of specific amplification products in the historic tissue samples. Out of these 25 positive specimens 12 cases could be successfully characterized by spoligotyping and compared to an international database. Interestingly, they all show either a *M. tuberculosis* or *M. africanum* pattern, but none revealed a *M. bovis* specific pattern. The oldest samples included in this study from a Middle Kingdom tomb (used exclusively between c. 2050 – 1650 BC) revealed a more *M. africanum* type specific spoligotyping signature. Those samples from later periods provided patterns typical for *M. tuberculosis*. This study clearly shows that spoligotyping can be used for the characterization of the members of the *M. tuberculosis* complex in historic tissue samples. In addition, our results do not support the theory that *M. tuberculosis* originated from the *M. bovis* type, but rather suggest that human *M. tuberculosis* may have originated from a precursor complex probably related to *M. africanum*.

Keywords: *M. tuberculosis*, PCR, Spoligotyping, Mummy

ORAL

.....

LIST OF PARTICIPANTS

.....

INDEX

- A**
- Aarents, M. 91
 Al Oumaoui, I. 14, 27
 Allsworth-Jones, P. 143, 144
 Almeida, P. 15, 48, 145
 Araújo, A. 157
 Arcini, C.A. 13
 Ardagna, Y. 133
 Arensburg, B. 164
 Aspillaga, E. 37
- B**
- Bachmeier, B. 16, 114, 140
 Baggieri, G. 17
 Barta, M. 120
 Basak, A. 161
 Baxarias, J. 18, 23, 64
 Beckett, R. 111, 167
 Belcastro, M. 19, 24, 95, 96
 Benavente, A. 37
 Bennike, P. 20
 Benus, R. 21, 99
 Bermudez de Castro, J. 50
 Berner, M. 22, 170
 Bernert, Z. 160
 Berrocal, M. 23, 64
 Bertacca, G. 62
 Bondioli, L. 128, 147
 Bonfiglioli, B. 24, 95
 Bourbou, C. 25
 Boylston, A. 83
 Brandstätter, F. 148
 Brasili, P. 96
 Brickley, M. 26, 131
 Brobeil, S. 14, 27
 Brothwell, D. 28
 Bruintjes, T. 29
 Buckley, H. 30
 Buikstra, J. 31
- C**
- Cáceres, M.P. 122
 Calabrese, A. 167
 Campillo, D. 18, 23, 64
 Canci, A. 32
 Capasso, L. 33, 51
 Caramella, D. 89, 90
 Cardoso, F. 34, 153
 Cardoso, H. 35
 Caro, L. 79
 Casabó, J. 127
 Castro, M. 37
 Catalano, P. 32, 89, 90
 Chataignier, Y. 161
 Ciranni, R. 38, 39, 62
 Codinha, S. 40
 Condemi, S. 24, 95
 Congiu, T. 41, 146
 Conlogue, G. 111, 167
- Cook, D. 42
 Cooper, A. 43
 Cordeiro, C. 44
 Cordy-Collins, A. 45, 46, 47, 111
 Costa, C. 15, 48, 145
 Cunha, E. 44, 49, 50
- D**
- D'Anastasio, R. 51
 De Juan, J. 98, 127
 Dennison, K. 52
 Devine, D. 110
 Di Fabrizio, A. 33
 Di Giandomenico, V. 167
 Dias, G. 52
 Diegmann, J. 53
 Donoghue, H. 120
 Duarte, C. 60, 61
 Duday, H. 164
 Dutour, O. 19, 54, 92, 93, 96,
 108, 133
- E**
- Edo, M. 79
 Erdal, C. 161
 Etxeberria, F. 122
- F**
- Facchini, F. 19, 24, 95, 96
 Fernandes, T. 48, 55, 56
 Fernández, M. 122
 Ferrada, C. 37
 Ferrari, L. 57, 102
 Ferreira, L. 157
 Ferreira, M.T. 58, 59
 Fiego, J. 123
 Figueiredo, A. 60, 61
 Filer, J. 61
 Finnegan, M. 94
 Fitzgerald, C. 147
 Fletcher, H. 120
 Fornaciari, G. 32, 38, 39, 62,
 89, 90, 167
 Fragoso, A. 63
- G**
- Garbini, F. 39
 Garcia, C. 78
 Garcia, E. 23, 64
 Garcia-Prósper, E. 125, 126
 Gardner, M. 144
 Garralda, M. 73
 George, A. 65
 Geyer, P. 66
 Giacomo, M. di. 17
 Gilbert, T. 43
 Gill-Robinson, H. 67
 Ginestà, J. 18
 Giusti, L. 38, 39, 62
 Gjerdrum, T. 68
- Gonçalves, M. 157
 Grabner, W. 171, 172
 Granja, R. 15, 55, 56
 Groot, M. 69
 Guillen, S. 70
 Guld, S. 22
- H**
- Hagedorn, H. 71, 114, 140
 Hardt, M. 129
 Heflin, T. 72
 Hengstenberg, N. 20
 Henke, D. 162
 Herrerin, J. 73
 Hewitt, B. 74
 Holl, A. 68
 Hoogland, M. 119
- I**
- Ikram, S. 61
 Isidro, A. 78
 Ives, R. 75
- J**
- Jakob, T. 76
 Jankauskas, R. 77
 Joos, H. 5, 53
 Jordana, X. 78
 Juan, J. 79
 Judd, M. 80
- K**
- Kainberger, F. 148
 Kanaan, A. 81
 Kjellström, A. 82
 Knüsel, C. 83
 Kocsis, G. 84
 Komar, D. 31
 Kreutz, K. 53, 85, 129
 Krever, M. L. 49
 Kristof, L. 120
 Kuzelka, V. 154
- L**
- La Verghetta, M. 33
 Lago, M. 60, 61
 Lancellotti, L. 113
 Larson, T. 66
 Le Mort, F. 161
 Leocata, P. 167, 168
 Lessa, A. 158
 Lewis, C. 110
 Lewis, M. 86
 Liebe-Harkort, C. 87
 Lombardi, G. 88
 Lopes, C. 34
 Lopes, L. 35
 López, B. 79
 Lunardini, A. 89, 90

- M**
- Maat, G. 91, 134
 Macchiarelli, R. 128, 147
 Macedo, M.C. 36
 Maczel, M. 92, 93, 108
 Maes, K. 68
 Malgosa, A. 78, 135
 Mancinelli, D. 168
 Marchetti, I. 62
 Marcsik, A. 29, 84, 92, 93, 94,
 108, 109, 118
 Mariotti, V. 19, 24, 95, 96
 Maroto, J. 123
 Marques, C. 97
 Martin-Dupont, S. 44
 Martínez, M. 18
 Martínez, N. 98
 Martinon-Torres, M. 50
 Masnicová, S. 21, 99
 Matias, A. 100
 Matos, V. 97
 Melkova, J. 154
 Mesquita, R. 116
 Meyer, C. 101
 Micalizio, S. 57, 102
 Michetti, E. 51
 Minozzi, S. 32, 89, 90
 Miquel-Feucht, M. 103, 104, 105
 Miranda, G. 168
 Miranda, M. 106
 Mitchell, P. 107
 Molnár, E. 108, 109
 Monsalve, M. 110
- N**
- Nascimento, F. 157
 Navas, R. 122
 Nelson, A. 111, 112
 Nelson, C. 112
 Nencioni, L. 32
 Neri, R. 113
 Nerlich, A. 16, 71, 93, 108,
 114, 115, 140, 171, 172
 Nunes, F. 116
- O**
- Oliveira, L. 63
 Oliveira, R. 116
 Ortner, D. 117
 Owens, L. 61
 Ozbal, H. 161
 Özbek, M. 161
- P**
- Paja, L. 118
 Pálfi, G. 108, 120
 Panhuysen, R. 119
 Pantano, W. 90
 Pany, D. 170
 Pap, I. 120
 Papathanasiou, A. 121
- Patzak, B. 148
 Peral, D. 122
 Perea, B. 142
 Pereira, C. 124
 Pérez-Pérez, A. 123
 Perrin, P. 161
 Pierfelice, L. 51
 Pinheiro, J. 44
 Pinheiro, V. 60
 Pinto Reis, M. 124
 Piquer, H. 126
 Plenk, H. 148
 Polo-Cerdá, M. 98, 125, 126, 127
 Powell, M. 42
 Premachandra, I. 52
 Prieto, J. 142
 Prowse, T. 128
- R**
- Rafigh, N. 129
 Ramirez, R. 50
 Rasteiro, A. 130
 Rastogi, N. 172
 Redfern, R. 131
 Reinhard, K. 132, 157, 158
 Reischl, U. 172
 Rempel, A. 110
 Richards, M. 110
 Richier, A. 133
 Rick, F. 157
 Rijpma, F. 134
 Rio, P. del 142
 Rissech, C. 135
 Roberts, C. 136, 137
 Rodrigues-Carvalho, C. 138
 Rodríguez, H. 79
 Rodríguez-Martín, C. 139
 Rodriques, E. 143
 Rohrbach, H. 16, 114, 115, 140
 Romero, A. 98, 127
 Rougé, D. 135
 Rougé-Maillart, C. 135
 Ryser, G. 141
- S**
- Sáez, A. 81
 Salles, A. 138
 Sánchez, E. 79
 Sánchez, J. 81, 142
 Sangiorgi, S. 41
 Santos, A.L. 143, 144
 Santos, S. 15, 48
 Santos, S.A. 145
 Sarmiento, S. 50
 Sassi, A. 41, 146
 Saunders, S. 128, 147
 Schamall, D. 148
 Schmidt-Schultz, T. 149, 150
 Schultz, M. 149, 150, 163
 Scmitz, P. 49
 Silva, A.M. 59, 151
- Silva, C. 152, 153
 Silva, S. 116
 Sindici, G. 167
 Smrcka, V. 154, 155
 Sola, C. 172
 Souich, P. 14
 Souza, S. 63, 138, 156, 157, 158
 Spigelman, M. 120
 Steckel, R. 169
 Stone, A. 110
 Straathof, D. 110
 Stroik, L. 66
 Strouhal, E. 159
 Subirá, M. 18, 23, 64
 Svenssonová, M. 155
 Szathmáry, L. 94
 Szeimies, U. 140
 Szikossy, I. 160
- T**
- Tadmouri, G. 161
 Tangl, S. 148
 Tavares, T. 153
 Teegen, W.-R. 162, 163
 Telmon, N. 135
 Teschler-Nicola, M. 148
 Thillaud, P. 56
 Tillier, A.-M. 164
 Turbon, D. 123
 Tyson, R. 165
- U**
- Uchoa, D. 116
 Umbelino, C. 166
- V**
- Valera, A. 60
 Valle, L. 37
 Van Den Bos, R. 91
 Ventura, L. 167, 168
 Ventura, T. 168
 Vernet, G. 133
 Vieira, D. 44
 Villalain-Blanco, J. 103, 104, 105
 Vitiello, A. 89, 90
- W**
- Walker, P. 68, 169
 Wall, N. 132
 Wasterlain, S. 50, 166
 Wiltshcke-Schrotta, K. 22, 170
 Wolf, H. 172
- Z**
- Zahed, L. 161
 Zavaglia, K. 62
 Zink, A. 16, 71, 93, 108, 114,
 115, 140, 171, 172

