



Paleopathology Club - Newsletter No. 150

<https://pathology.vcu.edu/research/research-labs/gerszten-lab-research/>

March, 2019



IMPORTANT NEWS

Our Newsletter is **ONLY** available via E-mail.

Dear Members:

The 43rd Scientific Session of the Paleopathology Club will be held Sunday, March 1, 2020 from 1:30-3:00 p.m. during the:

109th Annual Meeting of
The United States and Canadian Academy of Pathology
Los Angeles Convention Center
Los Angeles, CA, U.S.A.

If you would like to submit a paper for platform presentation, please send us the title and author.

The 42nd Scientific Session of the Paleopathology Club was held Sunday, March 17, 2019 from 1:30-3:00 p.m. during the:

108th Annual Meeting of
The United States and Canadian Academy of Pathology
Gaylord National Resort and Convention Center
National Harbor, Maryland, U.S.A.



Pictured from left to right are: Drs. Hagggen D. Klaus, Douglas Owsley, Enrique Gerszten, Miguel A. Sanchez, Pedro L. Fernández and Aurelio Ariza

The abstracts of their presentations are enclosed.

Answer to Case #145

Diagnosis: Smallpox. We don't know exactly when the disease killed the priest shown in the slide, we suspect that he died some time in the eighteenth century.

References:

1. Epidemic disease of Mexico City 1761-1813 by Donald B. Cooper, University of Texas, 1965.
2. Medicine in Mexico, by Gordon Schendel, University of Texas, 1968.

Submitted by: Dr. Enrique Gerszten, Virginia Commonwealth University, Medical College of Virginia, Richmond, Virginia.

The answer to Case #145 can be viewed and printed in Internet Explorer 6.0 at:

<https://pathology.vcu.edu/research/research-labs/gerszten-lab-research/case-studies/cases-130-145/>

Case #146:

History: Subcutaneous mass on the right side of the chest from a male aged 14 of Northern Chile from 1,100 to 1,200 AD.

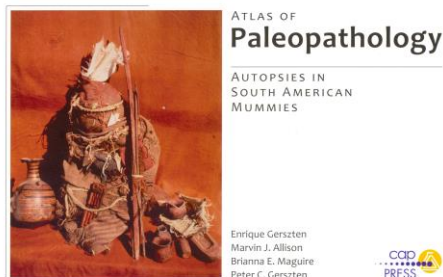
Submitted by: Dr. Enrique Gerszten, Virginia Commonwealth University, Medical College of Virginia, Richmond, Virginia.

The slide of Case #146 can be best viewed and printed in Internet Explorer 6.0 at:

<https://pathology.vcu.edu/research/research-labs/gerszten-lab-research/case-studies/>

Notice!

1. If you have an interesting slide you would like to share with other members, please send it along with the history.



2. We published an "Atlas" of Paleopathology, which is a synopsis of 40 years of investigation in South American Mummies. This publication is available at CAP Press. Northfield, IL, 60093, phone: 800-323-4040 option 1, and is directed mainly at those interested in Archeology, Anthropology, History of Medicine, Forensic Pathology and Pathology (Cost \$35.00).

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Egyptian Paleopathology: New Discoveries at Three Different Excavation Sites

Miguel A. Sanchez, Englewood Hospital Medical Center, Englewood, New Jersey

The study of ancient human remains in general provides a window into not only medical issues of the past but also the findings can give us information about many of the aspects of life in antiquity. Social, economic and political observations can be made that help to understand ancient societies. The Ancient Egyptians believed in the afterlife as a physical continuity of early existence the process to preserve the human body evolved into mummification.

Mummification used different techniques through the centuries and left us a rich, if uneven document, of many aspects of their contemporary life. For the last ten years we have been involved in the excavation of TT (Thebes Tomb) 16 and TT11-12 and as consultants for Egyptologists excavating TT110. TT16 is a project of the University of Memphis in Tennessee. The excavation is direct by Dr. Susan Onstein. The Paleopathology team includes Drs. Miguel Sanchez (Paleopathologist), Jesus Herrerin (Physical Anthropologist) and Rosa Dinares (Radiologist).

The tomb dates from the New Kingdom during the period of Ramses II (1279-1213 BCE). The original owners were Panehsy and his wife Ternute or Taneru. There are many fascinating aspects of the decorations of the tomb, including two representations of Temple Facade, a braying donkey, two scenes of the Three Goddesses, two scenes of Hathor of the Mountain (a funerary aspect of the Goddess Hathor) and depictions of the deified Amunhotep I and Ahmose-Nefertari. Panehsy was a priest in the cult of Amunhotep I who was during the Ramesside era considered a powerful oracular figure. Villagers will approach the statue when in procession through the community and ask it questions. It was Panehsy's job to carry the statue and perhaps to even interpret the god's response.

Paneshsy was also a chanter in an Amun Temple. The most likely location for this service to Amun is Karnak Temple, and at least one of the Temple Facades probably represents a Ramesside pylon at Karnak. Taneru was also a chantress in the cult of Amun. Hundreds of intrusion burials took place in the next thousand years. The tomb was looted both in ancient and modern times and the mummies were hacked apart, more than likely for the sole purpose of retrieving/stealing valuables from the bodies, mainly amulets of precious metals.

Today regulations do not allow intact mummies by and large to be unwrapped, however, this does not apply to fragmented bodies which can be thoroughly studied. TT11-12 have more complex history and the actual chronology is still evolving because the excavation is discovering chambers, expanding the original New Kingdom findings. Excavation is a combined project from the Spanish CSIC (Superior Council of Scientific Research) and with the assistance of the Egyptian Supreme Council of Antiquities. It is directed by Jose M. Galan, PhD, that oversees dozens of professional researchers and employees more than a hundred Egyptian assistants.

Described as the tombs of Djehuty and Hary is a complex manifold larger than TT16. The original excavation started in 2001 and is dated to the period of Hatshepsut (Circa 1460 BCE), but Hary is believed to have lived fifty (50) years earlier during the first kings of the Eighteenth Dynasty. Earlier tombs may also be behind the original excavation and interments continues into the Ptolemaic period.

The first few seasons were dedicated to archeological priorities, like stabilization and mapping. The paleopathological team has been active in the last few seasons. TT110 is a combined project of ARCE (American Research Center in Egypt) and the Egyptian government. Our role with this tomb was the performance of x-rays on some interesting samples that will be discussed later.

Portable radiology was introduced at all three sites during the last few years adding a new dimension to the macroscopic examination of the remains. At all three sites, several cases of neoplastic processes have been found. A woman with metastatic carcinoma, most likely breast (TT10). Several soft tissue tumors including retroperitoneal lipoma-liposarcoma and a gastric spindle cell, probably malignant tumor.

Our previous observations that post-mortem procedures were performed to complete and repair bodies for the afterlife are confirmed. Two mummies of young women will be shown as examples of perinatal mortality.

As reported by many researchers, the high number of dental problems, including life threatening abscesses, was documented as is the high incident of osteomyelitis. The large number of mummified bodies gives us the opportunity to also identify local technical aspects of the mummification process related to the extraction of the brain that may be unique to embalmers of the area.

The number of young children bones is an expected finding given the prevalence of infant mortality but the large number of children at TT16 raises the possibility of a religious connection between the original owners of the tomb and infants but may be bias due to the looting process.

References:

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Excavations at the Courtyard of the tomb of Djehuty (TT 11); (J. M. Galán), en P. Kousoulis (eds.), Xth International Congress of Egyptologists (Orientalia Lovaniensia Analecta, 241), Lovaina 2015, 207-220
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Prosthesis for the After Life in TT16, Luxor, Egypt; Jesus Herrerin, Miguel A. Sanchez, Suzanne Onstein, Virginia Raeckard, JARCE Bulletin 50 (2014), 127-145

Malignant Tumors in an Ancient Egyptian Population; Zink A, Rohrbach H, Szeimies U, Hagedorn HG, Haas CJ, Weys C, Bachmeier B, Nerlich AG.; PubMed, [Anticancer research](#) 19(5B):4273-7 · September 1999

11th Dynasty Burials Below Djehuty's Courtyard (TT 11) in Dra Abu el-Naga (J. M. Galán), Bulletin of the Egyptological Seminar 19 (2015), 331-346.

Smallpox in the 19th Century: the Spanish Philanthropic Expeditions

Aurelio Ariza, Department of Pathology, Hospital Germans Trias i Pujol, Autonomous University of Barcelona, Badalona, Barcelona, Spain

Smallpox may have circulated among ancient Egyptians, as suggested by the pustular eruption shown by the mummy of Pharaoh Ramses V. By the end of the 10th century smallpox had become endemic across the more densely populated areas of Eurasia and North Africa. The Americas, however, stayed free of this scourge until its importation by the Europeans in the 16th century, with devastating consequences for the immunologically naïve Amerindian population.

Variolation, practiced for centuries in the Orient (China, India, Turkey) as a preventive measure against smallpox (variola in Latin), consisted of inoculating blister fluid from a mild smallpox case to healthy persons to immunize them against the infection. The practice was introduced into England in the early 18th century and became popular across Europe and its colonies. The great leap forward in smallpox prevention, however, occurred in 1796, when Edward Jenner took fluid from the cowpox (vaccinia) blisters of a milkmaid and smeared it on the unbroken skin of the child James Phipps. “Poor Phipps” was then inoculated with smallpox about a dozen times by Jenner to demonstrate that he was really protected.

Meanwhile in Spain smallpox wreaked havoc on the family of King Charles IV. Taking advantage of the King’s awareness of the problem, the court’s doctors proposed the launching of a global expedition to take the recently developed vaccine to the Spanish possessions in the Americas and the Philippines. The King provided the necessary team and a ship (the corvette Maria Pita) and sent personal letters to the Spanish viceroys, governors and bishops overseas requesting their collaboration.

The surgeon Francisco Xavier de Balmis was appointed as expedition’s director for his experience in the Americas, where he had made original botanical observations (*Begonia balmisiana*) and studied the Indian use of medicinal plants. Additionally, Balmis had widely practiced smallpox vaccination in Madrid and translated Moreau de la Sarthe’s reference book from French into Spanish. Multiple copies of this book, whose drawings of the various stages of smallpox lesions were particularly useful, were made available to the expedition to be distributed as it advanced.

At this point the main problem was how to take the vaccine fluid from Spain to the Americas. The fluid lost effectiveness after a week or so and the sea journey took much longer. To circumvent the problem a very imaginative solution was devised. Balmis decided he would take 22 children from an orphanage in the seaport of Corunna, northwest Spain, and use them as live carriers who would be sequentially vaccinated until reaching the Americas. Thus, he would first vaccinate a couple of children and when their blisters were mature he would take fluid from them and vaccinate another couple and so on.

The ship left Corunna on 30 November 1803. On board were, in addition to Balmis and the 22 orphans (aged between 3 and 9 years), the surgeon Josep Salvany as second in command, Isabel Sendales as rectoress of the orphanage (the only woman in the expedition), two assistant surgeons, two practitioners, three nurses and the ship’s crew.

The expedition first stopped off at Tenerife, whence the vaccination spread to the rest of the Canary Islands. After crossing the Atlantic, the warm welcome enjoyed at Tenerife contrasted with the cold reception in Puerto Rico, where it was also difficult to get new children as carriers. The fortunes of the expedition improved considerably in Venezuela, where a triumphant reception was followed by the efficient work of the vaccination boards. Afterwards, to facilitate the vaccine distribution, the expedition divided and Balmis went north, while Salvany went south.

Salvany traveled mostly by land. Model organization of vaccination boards in Cartagena and Bogotá was followed by a hero’s welcome in Quito. Then, as he crossed the Andes, an array of misfortunes (diabetes, malaria, diphtheria, loss of one eye and one hand, tuberculosis) plagued Salvany, who once in Lima got a medical degree at the university of San Marcos, bravely fought vaccine sellers,

and preached the Indians on the merits of vaccination. After Salvany's death in Cochabamba in 1810 his collaborators branched into several regional subexpeditions.

Meanwhile, in the north, Balmis sailed from Venezuela to Havana and engaged in massive vaccination in Cuba where, unable to find new carrier children, he resorted to black female slaves as carriers. From Cuba he went to Yucatán, whence several subexpeditions set off by land and sea. From Mexico City, Balmis sent further subexpeditions to the north (Texas) and the south (Central America) and then left for the Philippines, taking 26 Mexican children with him. The stormy journey, made on a small ship, followed the Acapulco-Manila route plied yearly by a Spanish fleet.

In the Philippines Balmis carried out massive vaccination across multiple islands and then sailed to China. Despite typhoons and pirates, he arrived in Portuguese Macao, where his efforts were greatly facilitated. An attempt to extend vaccination inland to Canton, however, was met with little success. Finally, on board a Portuguese ship Balmis crossed the Indian and Atlantic Oceans, disembarked in Lisbon in 1806 and was honored by King Charles IV in Madrid. His collaborators continued his work in the Americas.

Balmis' expedition, inspired by the new tenets of the Enlightenment, science and philanthropy, was the first of its kind to have a global scope. As a result, about 1.5 million persons were vaccinated against smallpox, vaccination boards were established across widely scattered areas of the Americas and Asia, and continued training was started in remote corners of an already globalized world. Not in vain, in 1806 Edward Jenner said about Balmis' expedition, "I don't imagine the annals of history furnish an example of philanthropy so noble, so extensive as this."

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- Franco-Paredes C, Lammoglia L, Santos-Preciado JI. The Spanish royal philanthropic expedition to bring smallpox vaccination to the New World and Asia in the 19th century. *Clin Infect Dis* 2005;41:1285-1289
- Mark C, Rigau-Pérez JG. The world first immunization campaign: the Spanish smallpox vaccine expedition, 1803-1813. *Bull Hist Med* 2009;83:63-94

Paleopathology in the Colonial Period in Northern Peru
Haagen D. Klaus, George Mason University, Fairfax, Virginia

In a wide variety of paleopathological studies, patterns of skeletal biology and disease have productively characterized the health and history of many peoples across space and time, especially during key adaptive transitions. Contact between Native Americans and Europeans represents the most recent of these transformative events from which our species emerged forever changed. Contact arguably represents also the most rapid, most global, and most violent adaptive transition over the last 7 million years and it is still unfolding (Murphy and Klaus, 2017). Archaeological perspectives on contact began to develop in the late 1980s, but only recently have bioarchaeological perspectives emerged, though Andean South America remained almost completely unexplored.

In this talk, I emphasize the role and significance of context-embedded approaches towards the paleopathology of contact in northern Peru. I summarize the findings from more than 15 years of research drawing from more than 1,200 Colonial period individuals excavated from within the Lambayeque Valley Complex of north coast Peru.

Our findings demonstrate that within the Colonial settlement of Mórrope, the native Muchik population suffered significantly. Non-specific indicators of biological stress show widespread increases in the prevalence of chronic infection, childhood anemia and growth faltering, DJD, and all forms of oral diseases (Klaus and Tam, 2009, 2010; Klaus et al. 2009). Yet, at the other end of the valley, the contemporaneous Muchik people in the town of Eten seem to have escaped many of the negative impacts of the postcontact reality. The paleopathological record reveals a far healthier and less stressed group of people in Eten (Klaus and Alvarez-Calderón 2017). These findings reveal a surprising and thoroughly unexpected range of health variation that quite convincingly refutes so-called “uniformitarian hypotheses” regarding the timing, modes, and tempos of native experiences of contact. These differences are interpreted via a web of contextual data spanning mortuary patterns, microenvironments, settlement patterns, and ceramic, paleobotanical, and zooarchaeological analyses. This context-driven approach towards research design and ultimately interpretation seeks to make an argument for a more integrative practice and conceptualization of paleopathology. Throughout the talk, I also place special emphasis upon Colonial examples of tuberculosis (Klaus et al., 2010), treponemal disease (Klaus and Ortner, 2014), scurvy (Klaus 2014, 2017), rare paleopathological conditions (e.g., ovarian teratoma, traumatically-induced epidermal inclusion cyst, possible evidence of smallpox, and the first archaeologically documented case of acute childhood leukemia) (Klaus 2016; Klaus and Ericksen 2013;

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Klaus and Byrnes 2013; Klaus et al. 2010) as well as the relationships between early life stress, later inflammatory conditions, and shortened lifespans.

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- 2016 A Probable Case of Acute Childhood Leukemia: Skeletal Involvement, Differential Diagnosis, and the Bioarchaeology of Cancer in South America. *International Journal of Osteoarchaeology* 26: 348-358.
- 2017 Paleopathological Rigor and Differential Diagnosis: Case Studies involving Observation, Description, and Diagnostic Frameworks for Scurvy in Skeletal Remains. *International Journal of Paleopathology* 19: 96-110.

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- 2013 Cranial Lesions and Maxillofacial Asymmetry in an Archaeological Skeleton from Peru. A Paleopathological Case of Possible Trauma-Induced Epidermal Inclusion Cysts. *Journal of Cranio-Maxillary Diseases* 2: 46-53

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- 2013 Osteological Evidence of an Ovarian Teratoma: Description and Differential Diagnosis of an Exotic Bone and Tooth Mass in a Colonial Burial from Eten, Peru. *International Journal of Paleopathology* 3: 294-301.

Klaus, Haagen D., and Rosabella Alvarez-Calderón

- 2017 Escaping Conquest? A First Look at Regional and Biological Variation of Postcontact Eten, Peru. In: *Colonized Bodies, Worlds Transformed: Toward a Global Bioarchaeology of Contact and Colonialism*, edited by Melissa S. Murphy and Haagen Klaus, pp. 95-128. Gainesville: University Press of Florida.

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- 2009 Contact in the Andes: Bioarchaeology of Systemic Stress in Postcontact Mórrope, Peru. *American Journal of Physical Anthropology* 138: 356-368.
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- 2010 Tuberculosis on the North Coast of Peru: Skeletal and Molecular Paleopathology of Pre-Hispanic and Postcontact Mycobacterium Disease. *Journal of Archaeological Science* 37: 2587-2597.

“Paleopathology of 17th Century Colonists in Virginia and Maryland”

Douglas W. Owsley, Smithsonian’s National Museum of Natural History, Washington, D.C.

For the past two decades, human skeletons from the first century of European settlement in the Chesapeake region of North America have been systematically documented resulting in an extensive database that includes pathological conditions in bones and teeth. Historic research suggests that as many as a third of Chesapeake newcomers died within one year. If they lasted through the first “seasoning” fevers, they faced uncertain futures, and were dying in high numbers, often at young ages. This presentation includes examples of bone and dental pathology from the 17th century colonies of Jamestown, Virginia and St. Mary’s City, Maryland. Chronic illnesses, acute infections, accidental injuries, wounds, nutritional deficiencies, and the medical “care” of the day cut short many lives. The bone, tooth and burial data reveal the rigors of life in the colonial Chesapeake for all individuals regardless of age, sex or social status.

Featured cases include examples of gunshot and arrow wounds, evidence for trephination and autopsy, and confirmation of cannibalism during the “starving time” of 1609-1610. Dental pathology also shows a different pattern in the New World due to reliance on maize, a sticky carbohydrate. Caries became more of a problem, and “rotten” teeth were allowed to abscess out or sometimes extracted by barber surgeons. To clean their teeth, some colonists scoured their teeth with abrasive acidic solutions that included vinegar and tobacco ashes rubbed onto teeth with a cloth. Obsessive cleaning wore away the enamel and exposed pulp chambers of front teeth, which led to abscessing. It also resulted in pronounced gingival and alveolar bone resorption.
