An Ottoman Cemetery in Romania: Report of Research Conducted with the IEMA Research and Travel Scholarship

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Introduction

In May of 2015, with the support of the Research and Travel Scholarship from the University at Buffalo's Institute for European and Mediterranean Archaeology (IEMA), data was collected from an archaeological collection in Timişoara, Romania. This report details the activities funded by this grant, discusses some preliminary results, and details future research and analyses.

Located on the western coast of Romania, Timişoara is a city with a diverse background, sharing much of its history with the adjacent Hungarian lands. In the 16th century, the Ottoman Empire's expansion into southeastern and central Europe resulted in the takeover and transformation of many cities, including Timişoara as well as Belgrade, Buda, and other geopolitically important places.[1] These cities soon became important Ottoman defense centers heavily invested in by the new leadership. Transformed into the Pashalik of Temesvár, this fortress city located on the eastern edge of the European Ottoman lands became an important part of a ring of defense fortifications, and would remain so for more than a century and a half.

In 2006 and again from 2013 to 2014, a large number of human skeletal remains threatened by construction were excavated by the Banat Museum of Timişoara (Muzeul Banatului Timişoara), brought up from two sections of a historic cemetery under the city streets.[2] These individuals, found next to the remnants of a mosque, were members of the Ottoman Muslim community that was settled in Timişoara in the 16th and 17th centuries. A bioarchaeological investigation of these remains is allowing for the study of a dynamic period in this city's history. The 2015 data trip supported by the IEMA Research and Travel Scholarship had three foci: the collection of craniometric measurements, the recording of preliminary pathological data, and the procurement of samples for a strontium isotope analysis.

Collection of Craniometric Data

Biodistance, or the analysis of metric and non-metric variation expressed in human skeletal material, is a non-destructive method that allows researchers to study questions of identity and group affinity. The use of these data are based on the understanding that groups of people who are more closely related will share more biological attributes,[3] allowing for analyses of certain traits expressed skeletally to be proxies for genetic data. Metric traits are measurable characteristics of the human skeleton driven by neutral evolution and predominately indicative of population history.[4] Measurements taken from the human skull are the most useful and common metrics taken in biodistance analyses since post-cranial elements are more susceptible to remodeling and functional modification[5] and thus less informative on biological relatedness. This established methodology is being utilized to explore questions of identity in the Timişoara skeletal series.

Using standard craniometric measurements based on Howells' measurements, a commonly used reference standard,[6] thirty-eight measurements were obtained from 28 adult crania in the Timişoara skeletal series (Fig. 1; Table 1). This craniometric data set is currently being analyzed in collaboration with Dr. Noreen von Cramon-Taubadel, Director of the Buffalo Human Evolutionary Morphology Lab.

Figure 1: An example of a craniometric measurement taken on a skull in the Timişoara skeletal series. Photo by K. G. Allen.

Table 1: Measurements obtained for biodistance analysis

ABBREVIATION	NAME	ABBREVIATION	NAME
GOL	Glabello-Occipital Length	MDH	Mastoid Height
NOL	Nasio-Occipital Length	MDB	Mastoid Width
BNL	Basion-Nasion Length	ZMB	Bimaxillary Breadth
BBH	Basion-Bregma Height	SSS	Zygomaxillary Subtense
XCB	Maximum Cranial Breadth	FMB	Bifrontal Breadth
XFB	Maximum Frontal Breadth	NAS	Nasio-frontal Subtense
STB	Bistephanic Breadth	EKB	Biorbital Breadth
ZYB	Bizygomatic Breadth	DKB	Interorbital Breadth
AUB	Biauricular Breadth	WNB	Simotic Chord
WCB	Minimum Cranial Breadth	IML	Malar Length Inferior
ASB	Biasterionic Breadth	XML	Malar Length Maximum
BPL	Basion-Prosthion Length	WMH	Cheek Height
NPH	Nasion-Prosthion Height	FOL	Foramen Magnum Length
NLH	Nasal Height	FRC	Nasion-Bregma Chord
OBH	Orbit Height Left	FRS	Nasion-Bregma Subtense
OBB	Orbit Breadth Left	PAC	Bregma-Lambda Chord
JUB	Bijugal Breadth	PAS	Bregma-Lambda Subtense
NLB	Nasal Breadth	OCC	Lambda-Opisthion Chord
MAB	Palate Breadth	OCS	Lambda-Opisthion Subtense

Figure 2: Head trauma on a probable male skull in the Timişoara skeletal series. Photo by K. G. Allen.

Preliminary Pathology Investigation

In addition to the collection of craniometric measurements for the purpose of a biodistance analysis, preliminary pathological data was collected during this trip. While obtaining measurements, pathological assaults on the crania were recorded and photographed. The most common forms of pathology in this preliminary investigation included traumatic injury to the head (Fig. 2), enamel hypoplasias in the dentition (Fig. 3) and porotic hyperostosis/cribra orbitalia manifestations (Fig. 4).

Trauma was not an unexpected pathology in this skeletal series, as many of these individuals were probably active members of the Ottoman military forces stationed in Timişoara. Historical accounts tell us that following the initial takeover of the city, Timişoara and the greater region remained an arena for battle and warfare for most of the occupation period.[7] In this context, interpersonal conflict resulting in permanent injuries on skeletal elements would likely not have been uncommon. In the 32 crania that were examined, six possible traumatic injuries to the cranial vaults of adult individuals were noted. Four individuals had healed blunt force traumas on the right side of their frontal bones. Additionally, two possible sharp force traumas on two separate crania were noted, one also located on the right side of the frontal bone in a similar position as the healed blunt forces injuries, and one on the side of the head, located on the left parietal bone. This last trauma was unique not only in location, but also in the fact that it was the only one of these five manifestations that occurred on a female skull.

Figure 3: Linear enamel hypoplasias on the upper left canine of a probable female in the Timişoara skeletal series. Photo by K. G. Allen.

Figure 4: Porotic hyperostosis on a fragment of the occipital bone of a juvenile from the Timişoara skeletal series. Photo by K.G. Allen.

Enamel hypoplasias, or deficiencies in the enamel thickness on the surface of tooth crowns, are non-specific stress indicators. The presence of these pathological markers on teeth is a permanent record of a time of severe biological stress in an individual's life. Hypoplasias only develop when the enamel of a tooth is forming, and therefore record stress events during development. These pathological markers have been correlated with a large number of sources of systemic stress, with disease and poor nutrition the main causes.[8] The most common manifestation of enamel hypoplasias are linear furrows, but pit defects and broad planes also occur.[9] In a pilot study of 17 individuals, enamel hypoplasias (predominately in the linear form) were found on 16 individuals, 14 of which had defects in two or more non-adjacent teeth indicative of systemic-stress, as opposed to a focalized trauma. While records of high stress might be presumed for males involved in warfare activities, these 16 individuals included eight adult males, five adult females, two juveniles and one adult of ambiguous sex; clearly systemic stress was not solely reserved for the male population.

Porotic hyperostosis (PH) and a variant of it, cribra orbitalia (CO), are much like enamel hypoplasias, as a skeletal manifestation of either is indicative of non-specific extreme or enduring stress. Lesions representing a thinning or complete destruction of the outer table of the cranial vault (PH) or the orbital roofs (CO) can be the result of a number of stressors, including inflammatory or hemorrhagic processes, tumors, different types of anemia, dietary disorders such as scurvy or rickets, or parasitic infections.[10] While neither enamel hypoplasias nor PH and CO can confidently be attributed to one specific cause, their presence represents a general state of poor-health and stress. In 32 skulls inspected, five cases of mild to moderate porotic hyperostosis was noted on the parietals and/or occipital bones; cribra orbitalia was noted in two individuals, mild in expression. Like enamel hypoplasias, records of PO and CO in this small sample indicate stress in diverse demographic groups, these seven individuals including two adult females, three adult males and two juveniles.

In addition to head trauma, enamel hypoplasias, and porotic hyperostosis/ cribra orbitalia, a number of other pathological assaults were noticed. While most of this data collection was focused solely on crania, some post-cranial defects were noted, including healed lesions on visceral ribs indicative of respiratory infection, post-cranial traumatic injuries, and osteoarthritis or osteophytosis of the vertebrae. Additionally, severe dental pathologies including abscesses, carious lesions, severe occlusal wear, crown staining, pipe facets and endentulism were prominent. Much work is still required to make broad conclusions, but initial investigations indicate a number of stress and health-related problems suffered by the Ottoman community in Timişoara.

Sample Collection for Stable Isotope Analysis

The third focus of this research trip was to procure samples intended for an analysis of stable isotopes. As stable isotopes of strontium have proven useful in questions of mobility, movement, and identity,[11] this project will utilize strontium isotope analysis to better understand the makeup of the Ottoman skeletal collection in Timişoara. Because dental enamel has proven the most resilient human tissue for preserving isotopic ratios,[12] teeth were collected for 21 individuals with suitable dentition and exported with permission from the relevant authorities. Additionally, 21 archaeological faunal dental samples from three species-*Sus domesticus* (domesticated pig), *Ovis aries* (sheep), and *Canis familiaris* (domesticated dog) were exported, to be utilized in establishing a local signature. The sample sizes for both the human and faunal specimens were dictated by the availability of appropriate samples. Strontium isotope analysis is currently planned for the fall of 2016. The samples collected from Timişoara will be tested at the Geochronology and Isotope Geochemistry Laboratory at the University of North Carolina at Chapel Hill.

Future Research Planned

This data collection trip funded by IEMA is the start of a much larger project. A number of future activities are planned with most of the analyses of the current data still underway and plans to expand the data set in progress. Expansion of the craniometrics portion of this research to include similar data sets from additional Ottoman skeletal series in Southeastern Europe is planned for the spring and summer of 2016. This will provide the opportunity for regional analyses of group composition and biological relatedness of Ottoman populations throughout the European territory. To complement biodistance analyses utilizing craniometric measurements, non-metric cranial traits will be recorded for all skeletal series. At this time, biodistance analyses will take precedence over pathology research but it is hoped that in the near future a return to questions of disease and health amongst the Ottoman garrison populations will be feasible.

Concluding Remarks

This report summarizes the data collection trip funded by the Research and Travel Scholarship from the University at Buffalo's Institute for European and Mediterranean Archaeology (IEMA). The data collected will be utilized as a part of a larger, more encompassing project. The ultimate focus at this time is on questions of identity and group composition in Ottoman communities established in southeastern Europe during Ottoman expansion. The Ottoman period has consistently been an understudied time period in archaeology, multi-period excavations even discarding or poorly recording Ottoman layers in pursuit of more 'valuable' time periods.[13] The modernity of this time period, however, and its known connections with national policies and political events in former Ottoman occupation areas makes it an extremely important period to understand. The bioarchaeological record offers the possibility to supplement the historical and traditional archaeological records, utilizing human skeletal remains to highlight an important time period in the recent past. In many areas of southeastern Europe, including western Romania, the replacement of the Ottoman regime with subsequent reigns (in the case of Timişoara, the Habsburgs of Austria) resulted in the destruction of the physical evidence of the Ottoman period. The uncovering of this recent archaeological cemetery in Timişoara, Romania is allowing for the exploration of a forgotten era in this city's history utilizing a new data source: human biological material. Additionally, this cemetery has inspired a larger regional analysis of European Ottoman communities investigated through the bioarchaeological record.

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Endnotes:

1 Parry 1990
2 Draşovean et al. 2007
3 Larsen 2015
4 Von Cramon-Taubadel 2014
5 Tyrrell 2000; Ruff et al. 2006
6 Howells 1973
7 Ágoston 2002
8 Mays 2010; Goodman and Rose 1990
9 Hillson 1996
10 Ortner 2003
11 Bennike et al. 2011; Ezzo and Price 2002; Giblin et al. 2013; Montgomery et al. 2005; Price et al. 2006; Tung and Knudson 2010
12 Lee-Thorp and Sponheimer 2003
13 Vorderstrasse 2014

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