Bioarchaeology at Umm el-Marra

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20 July, 2017

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Chapter 1

Introduction

1.1 General Background

The author joined the Tell Umm el-Marra Expedition as bioarchaeologist for the 2006 field season. During that time, the author collected osteological data on human skeletal remains recovered from the Early Bronze mortuary complex, as well as several other skeletal assemblages *not* associated with the Early Bronze period and/or recovered from localities outside of the site's acropolis center. All skeletal remains analyzed in 2006 are curated on site, except a small collection of skeletal and dental remains, now curated by Glenn Schwartz, project co-director.

Barbara Stuart provided initial field descriptions of the human remains, and other preliminary assessments were made by Bruno Frohlich and Judith Littleton of the Smithsonian Institution (Schwartz, 2007). The goal was to re-analyze all human remains recovered from the tomb complex in order to investigate a number of topics, including demography, diet, health and paleopathology, possible familial relationships, and lifestyle reconstruction.

1.2 Methods

All data were collected by the author according to protocols outlined in *Standards for Data Collection from Human Skeletal Remains* (Buikstra and Ubelaker, 1994). The following report includes a summary of those observations and some results of recent analyses of the data.

Chapter 2

Early Bronze Remains

2.1 Preservation and Demography

Generally, preservation of the sample is fair, although there is differential preservation between and within tombs. Remains from Tombs 1 and 4 exhibit the best overall preservation. Individuals with poor preservation were generally incomplete, highly fragmentary, or the bones had undergone significant taphonomic degradation.

For each tomb, the minimum number of individuals (MNI) was determined by considering repeated skeletal elements and matching commingled remains based upon diagnostic indicators for age and sex, as well as general appearance. In some instances, especially if the remains were highly fragmentary, a large portion of the remains could not be assigned to any particular individual (e.g., Tombs 3 and 7). Human remains recovered from the tomb complex (up to the 2006 field season) represent an MNI of 35 individuals (see Table 1).

2.2 Paleopathology

2.2.1 General Observations

Due to diff erential preservation, paleopathological data are not reported for nearly one-third of the sample. Also, because of time constraints, paleopathology was not recorded for the individuals from Tomb 8. Of those observed, 13/21 individuals exhibit some type of pathological lesion.

The most common pathology is periostitis, which is commonly found in archaeological cemetery samples (Ortner, 2003). Periostitis occurs in 6/21 of the observable sample and more frequently on the lower limbs, although the upper limbs are also aff ected. Both active and healed lesions were observed. Porotic hyperostosis, another lesion commonly reported in archaeological skeletal samples, is uncommon in the Umm el-Marra sample. Porotic hyperostosis is often considered a result of anemia, although its etiology is likely more complicated (Walker et al., 2009). No cases of porotic hyperostosis on the cranial vault occur; however, cribra orbitalia—porosities on the orbital roof—occur in 2/21 individuals.

Table 2.1: MMD Matrix for Umm el-Marra and Comparative Samples

	SOU	LL	KM	AI	EN	AS	LER	JT	UEM
SOU	0.00000	0.17423	0.07711	0.02062	0.09878	0.51591	0.45097	0.24715	1.67747
LL	0.17423	0.00000	0.10572	0.06543	0.02985	0.16781	0.09523	0.10818	1.28277
KM	0.07711	0.10572	0.00000	-0.02865	0.01760	0.19850	0.24307	0.32065	1.79021
AI	0.02062	0.06543	-0.02865	0.00000	-0.07538	0.08728	0.19567	0.07651	1.80810
EN	0.09878	0.02985	0.01760	-0.07538	0.00000	0.07474	0.08974	0.15814	1.74441
AS	0.51591	0.16781	0.19850	0.08728	0.07474	0.00000	0.02527	0.18342	1.46623
LER	0.45097	0.09523	0.24307	0.19567	0.08974	0.02527	0.00000	0.12811	1.52949
JT	0.24715	0.10818	0.32065	0.07651	0.15814	0.18342	0.12811	0.00000	1.25275
UEM	1.67747	1.28277	1.79021	1.80810	1.74441	1.46623	1.52949	1.25275	0.00000

Table 2.2: Significance Matrix for Umm el-Marra and Comparative Samples

	SOU	LL	KM	AI	EN	AS	LER	JT	UEM
SOU	1.00000	0.00523	0.16586	0.88139	0.12800	0.00000	0.00000	0.00021	0
LL	0.00523	1.00000	0.00372	0.61627	0.54867	0.05027	0.00062	0.02086	0
KM	0.16586	0.00372	1.00000	1.00000	0.68468	0.01361	0.00000	0.00000	0
AI	0.88139	0.61627	1.00000	1.00000	1.00000	0.56539	0.10508	0.55820	0
EN	0.12800	0.54867	0.68468	1.00000	1.00000	0.40909	0.01097	0.00223	0
AS	0.00000	0.05027	0.01361	0.56539	0.40909	1.00000	0.73422	0.04283	0
LER	0.00000	0.00062	0.00000	0.10508	0.01097	0.73422	1.00000	0.00005	0
JT	0.00021	0.02086	0.00000	0.55820	0.00223	0.04283	0.00005	1.00000	0
UEM	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1

2.2.2 Selected Cases

2.3 Dietary Reconstruction

2.3.1 Stable Isotope Analysis

2.3.2 Dental Wear

2.4 Dental Nonmetrics

Dental nonmectric data were collected using the UADAS recording system (Scott and Turner, 2000). Population distance was measured using Smith's Mean Measure of Divergence, or MMD (Smith, 1977). The MMD has become a well established method for anthropologists using nonmetric traints to investigate biological distance between populations (Harris and Sjøvold, 2004). Soltysiak (2011) provides an R script for calculating the MMD.

Also of interest is the significance matrix.

Also of interest is the standard deviation matrix.

Table 2.3: Standard Deviation Matrix for Umm el-Marra and Comparative Samples

	SOU	LL	KM	AI	EN	AS	LER	JT	UEM
SOU	0.08426	0.06239	0.05565	0.13820	0.06490	0.10336	0.04772	0.06666	0.06900
LL	0.06239	0.04422	0.03644	0.13056	0.04977	0.08572	0.02782	0.04682	0.04936
KM	0.05565	0.03644	0.02896	0.12668	0.04334	0.08045	0.02028	0.03980	0.04228
AI	0.13820	0.13056	0.12668	0.23607	0.14516	0.15183	0.12073	0.13067	0.13382
EN	0.06490	0.04977	0.04334	0.14516	0.06158	0.09054	0.03528	0.05171	0.05538
AS	0.10336	0.08572	0.08045	0.15183	0.09054	0.13952	0.07443	0.09056	0.09436
LER	0.04772	0.02782	0.02028	0.12073	0.03528	0.07443	0.01184	0.03160	0.03415
JT	0.06666	0.04682	0.03980	0.13067	0.05171	0.09056	0.03160	0.05160	0.05341
UEM	0.06900	0.04936	0.04228	0.13382	0.05538	0.09436	0.03415	0.05341	0.05664

Chapter 3

Non-Early Bronze Remains

During the 2006 excavations, some remains from non-Early Bronze contexts were recovered and some field analysis completed.

Chapter 4

Summary and Conclusion

In 2006, the author analyzed human skeletal remains from an Early Bronze Age mortuary complex at Tell Umm el-Marra, Syria.

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