

The Skeletal Biology of an Early Bronze IB Charnel House at Bab edh-Dhra, Jordan

Introduction

Excavations of the large cemetery area just south of the fortified town site of Bab edh-Dhra, Jordan have exposed burials from virtually the entire Early Bronze Age (Lapp, 1968; Schaub, 1972; Rast and Schaub, 1974). Variation in the burial patterns reflects cultural changes taking place during the Early Bronze Age occupation of the site. These variations in type of burial and tomb architecture may be indicative of biological differences in the people living at Bab edh-Dhra during the subphases of this time period.

During excavations at the site in 1977, skeletal remains were obtained from Early Bronze I shaft tombs, an Early Bronze IB charnel house (G 1), and an Early Bronze II charnel house (A 56). Most of the data obtained in research conducted thus far are from the shaft tomb burials (Ortner, 1979; Ortner, 1981) largely due to the fact that preservation of these burials was better. Recently I have begun to obtain preliminary data from the skeletons excavated from the G 1 charnel house and these data are the basis for the following report.

The G 1 charnel house had been significantly disturbed by non-archaeologically trained individuals in search of antiquities. Thus much of the pottery, sherds and skeletal remains were not in situ and some of the pottery was missing entirely. Most of the specimens which remained were badly broken and scattered making reconstruction a major challenge. However, it is clear that disturbance of the pottery and skeletons occurred in ancient times as well. Apparently earlier burials were disturbed to make room for subsequent burials. In the process pottery was broken along with the skeletal remains and the bones of the earlier burials would be scattered. Some of the disturbance of the charnel house may have been the result of vandalism in antiquity. The presence of multiple charcoal lenses (Schaub, 1981) suggests several episodes in which the roof of the charnel house was burned in antiquity, perhaps by raiding neighbours.

The charnel house itself was circular, approximately 3.7 metres in diameter at the base of the interior (FIG. 1). Mud brick was used in construction with stone used for the entry way. A more comprehensive report on the architecture and pottery is provided by Schaub (1981).

1. General view of the G 1 charnel house at Bab edh-Dhra, Jordan after removal of skeletons and pottery. The mudbrick walls curve inward. Notice the stone orthostats and floor at the entryway seen in the upper left portion of the circular tomb.



Some of the burials appear to have been primary interments as indicated by the presence of some partially articulated burials (Ortner, 1981). Because of the disturbance of the burials the presence of secondary interment cannot be ruled out but primary burial would have been the predominant pattern.

Description of skeletal remains

There are two limiting factors in the analysis of the G 1 skeletal remains. First, the skeletons have been broken and scattered in both recent times and antiquity. This presents formidable problems in reconstructing enough of the specimens to obtain the necessary data. Second, many of the bones have been burned. In some cases the burning has vitrified the bone with minimal distortion, thus preserving the broken

fragments in excellent condition. In other cases the bones have been badly deformed by the heat. Baby (1954) reported that when bones are dry at the time of burning, they may split but do not become deformed. However, if the bones are covered with flesh they tend to develop transverse fractures and marked deformation.

The burned skeletal specimens from G 1 exhibit both types of reaction to burning. The implication of this is that the burning was done in antiquity and almost certainly when people were still living at Bab edh-Dhra.

Because of the fragmentary nature of the bones, a comprehensive analysis of the specimens from G 1 will have to await reconstruction. Thus the data and conclusions presented here should be viewed as tentative. Estimates of the total number of individuals in the tomb may be obtained by counting the number of bones present of a certain type. The bone most frequently present in the analysis conducted thus far is the temporal. A total of 112 left and 97 right temporal bones have been identified in skeletal specimens. Since there are undoubtedly some examples where a left temporal does not have a matching bone from the right side, 112 should be viewed as the minimum number of individuals buried in the tomb. I would estimate that the actual number is probably about 150 individuals.

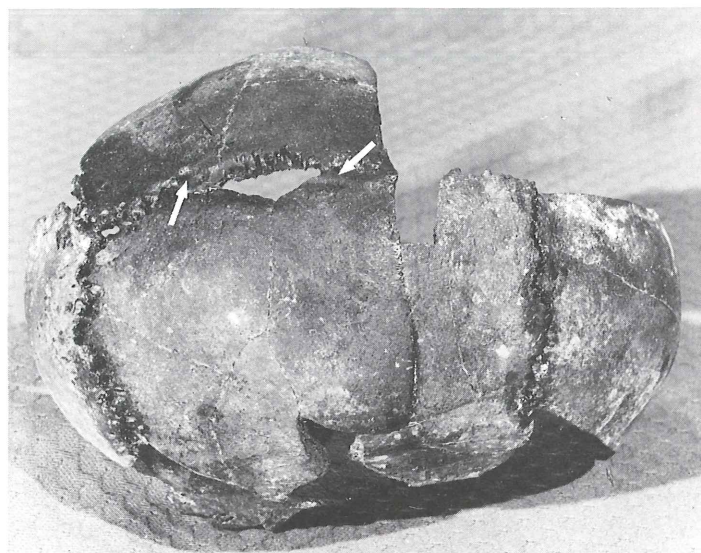
The age distribution cannot be determined as accurately on the temporal bone as on some of the other bones of the skeleton. Thus far I have obtained a crude estimate of the age distribution based on the mandibles (table 1). The minimum number of discrete mandibles is 88. Of these, 34 per cent are subadult specimens (under 18 years of age). Because of the disturbance of the burials I would expect the infant and early childhood age categories to be somewhat under represented since these skeletons are not preserved as well and are more likely to be overlooked during excavation.

Table 1 Age Distribution of the Mandibles from the G 1 Charnel House, Bab edh-Dhra, Jordan

	N	%	
Birth-1 year	5	5.7	} 34.1
1-6 years	14	15.9	
12-18 years	11	12.5	
18+ years	<u>58</u>	65.9	
Total	88		

One of the most dramatic findings is the evidence of healed injuries to the skull in the G 1 specimens. Thus far I have identified three cases of what were undoubtedly axe wounds. The remodelling of the bone adjacent to the trauma clearly indicates recovery and long term survival. In two cases the axe had penetrated both tables of the skull and exposed the dura. In one of these (FIG. 2) the injury occurs in the posterior third of an adult male skull just to the right of the midline. This suggests that the blow may have come while the individual was trying to escape. The mark on the skull left by the injury includes a groove extending about 1 cm. on either end of the

2. Top view of a partially reconstructed adult male skull from the G 1 charnel house. Notice the healed axe wound in the posterior third of the skull. The wound penetrated both tables of the skull and exposed the underlying dura. There is no evidence that the injury was in any way related to the ultimate cause of death. Arrows indicate trauma from the axe which penetrated only the outer table.



long axis of the open defect in the skull. Apparently the axe blow removed a portion of the parietal bone where it cut through the bone. The fragment was apparently broken loose from its connection with the left parietal bone at the sagittal suture at the time of the injury. In the bone surrounding the trauma there is evidence of slight healed porosity. This indicates the presence of inflammation probably due to the injury being complicated by a slight infection.

The second case is a small fragment of a parietal bone containing part of the defect produced by an axe wound. The trauma had penetrated both tables but not sufficiently to have threatened the brain directly.

The third case is seen in the skull of a young adult, probably but not certainly male. The injury is to the left parietal near the midline but affects only the outer table. The depression measures 3.7 cm. by 1.7 cm. and was probably produced by a glancing blow of the axe. There is no evidence of inflammation and the extensive remodelling of the bone indicates complete healing.

Conclusions

The presence of burned and deformed bones raises the possibility of cremation as part of the funerary practice at Bab edh-Dhra in the Early Bronze Age. The possibility of such a practice is supported by the existence of several charcoal lenses in the G 1 tomb. However, the fact that some of the bones were burned after the soft tissues had decayed indicates that such a practice, if it existed, was not done to all individuals. In my opinion a more plausible explanation for the existence of burned bones is vandalism involving the burning of the charnel houses.

It is possible that some cremations were done away from the tomb with interment in the tomb after cremation. However, the presence of burned undeformed bones and charring of pottery after the pots had been placed in the tomb, supports the conclusion that the combustible portions of the charnel house burned and probably did so on several occasions after repair of the roof. The variation in the reaction of the bones to burning is adequately explained as reflecting varying degrees of skeletonization of bodies in the tomb at the time of burning.

The reasonably conservative estimate of a total of 150 burials in the G 1 tomb suggests burial over an extended period of time. With a diameter of 3.7 metres, the total floorspace available for extended bodies would be 10.75 metres². If we allow a space 0.5 metres by 1.6 metres for a body this would permit simultaneous burial of no more than 13 bodies provided that nothing else was placed in the tomb. Clearly with the funerary gifts occupying considerable floorspace it is unlikely that more than five bodies would have been placed in the tomb at a time. However, since the soft tissue would probably have decayed fairly rapidly (within one year), the size of the charnel house would not have been a significant factor limiting the number of burials, in view of the practice of pushing earlier burials to the periphery of the tomb. The size of the G 1 charnel house would certainly be compatible with a family burial tomb.

The age distribution of mandibles is very close to that reported for the Early Bronze I A shaft tombs at Bab edh-Dhra (Ortner, 1979). The infant mortality of the G 1 tomb is probably underestimated. The overall frequency of subadult deaths is slightly higher than reported for the shaft tomb skeletons. If, as seems likely, subadult mortality is underestimated for the G 1 skeletal sample, the frequency of these deaths, in comparison with the Early Bronze shaft tomb sample, is greater. Schaub (1981; also see present volume) suggests that the Early Bronze I B phase marks the beginning of settled occupation in an open village at Bab edh-Dhra. With permanent settlements I would expect to find an increase in subadult mortality, since endemic infectious disease and the problems of infectious contagion increase in permanent communities. The evidence from the G 1 skeletal remains suggests that such an increase in subadult mortality may have occurred.

The evidence of axe wounds of the skull in the G 1 specimens is of interest particularly when compared with the skeletal remains from the Early Bronze I A shaft tombs. I have not found a single example of skull trauma of any kind in the

Early Bronze I A shaft tomb specimens studied thus far. The only case of skull trauma from a shaft tomb is found in the north chamber of shaft tomb A 100 (Ortner, 1979). However, this particular tomb chamber is dated to the Early Bronze I B period and is thus contemporaneous with the G 1 skeletons.

Schaub (*ibid*) suggests that the development of walled towns in Jordan became a significant trend during the initial stages of the Early Bronze II phase. The need for such defensive structures may reflect what appears to be a marked increase in hostilities, as suggested by the axe wounds seen in the Early Bronze I B skeletons from the G 1 tomb. However, this conclusion must remain tentative. An alternative explanation might be that the G 1 charnel house is a family tomb with an unusually high number of members who were warriors.

Up till now the reconstruction of the broken skulls from G 1 has not progressed to the point where careful comparisons with other Near Eastern human populations are justified. I have, however, conducted some preliminary studies on a small sample of skulls from Abydos in Egypt. The Abydos skulls may be somewhat later than the G 1 skeletons but nevertheless are close in time and remarkably similar on the basis of studies conducted thus far. In view of the proximity of Egypt and the likelihood of contact with the people of Bab edh-Dhra such a similarity is not surprising and deserves a more careful evaluation.

References

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