

Human remains from Bakr Awa, Iraqi Kurdistan, 2014

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Tell Bakr Awa (35°13'14''N, 45°56'26''E) is located in the eastern part of Shahrizor Plain, near the town of Halabja (Iraqi Kurdistan). Its location, near routes through the Zagros Mountains, favoured the site as an important place on the trade route between Mesopotamia and Iran. This fact is reflected in material culture at Bakr Awa, with influences from the regions of Diyala, Southern Mesopotamia and Iran being present. Such influences are visible especially in the archaeological record from the first half of the second millennium BCE, when Bakr Awa was a prosperous city with far-reaching contacts. During the Iron Age the density of settlement was lower and artefacts had more local character. Archaeologically confirmed human occupation of the tell continues from the Early Bronze Age to the Ottoman Period (Miglus et al. 2011, 2013).

Ephraim Speiser carried out the first archaeological excavation at Bakr Awa in 1927 and proposed that the site was the city of Atlila renamed to Dur-Ashur in the 9th c. BCE (Speiser 1927). Two other excavation campaigns were later carried out by archaeologists from the Iraqi General Directorate of Antiquities between 1960–1961 (Al-Husaini 1962). Present research began in 2010 under the direction of P.A. Miglus from the Institute of Pre- and Protohistory at the University of Heidelberg (Miglus et al. 2011, 2013). Research on the human remains from the site has been conducted since 2011 and more than 90 individuals have been analysed to obtain information about paleodemography and the biological condition of historical populations of Bakr Awa (Fetner 2012, 2014; Miglus et al. 2013: 81–85).

In 2014 excavations were continued in the lower city (Areas 1 and 2) and on the citadel (Area 3). Also exploration of one grave in Area 5 (lower city) was necessary because the grave was partly destroyed by a looter following the 2013 excavation campaign. Human remains described in this report originate exclusively from the lower city.

The human remains from Tell Bakr Awa were described following Buikstra and Ubelaker (1994). The protocol was completed by additional methods of age assessment of subadults (Gustafson & Koch 1974; Schaeffer et al. 2009; Smith 1991) and adults (Lovejoy 1985). When necessary, sex was determined following some dimen-

sions of long bones (Oliver 1960). Palaeopathological changes were identified and described following Ortner (2003), Steckel et al. (2011) and Waldron (2009). Moreover, the remains of selected individuals were sampled for further analysis including study of dental non-metric traits and biochemical analysis of collagen and bioapatite. Summarized palaeodemographical data are provided in Table 1.

Table 1. Summarized data of age-at-death and sex determination.

Age-at-death	Male	Female	Unknown	Total
0-0.9			2	2
1-6.9			2	2
7-13.9			3	3
20-29		1	1	2
30-55	1	2		3
Adult	1		3	4
Total	2	3	11	16

Five burials were discovered in Area 1: two neonate burials in jars, two adult burials and one secondary burial containing the remains of at least two individuals (MNI estimate is based on cranial bones). Linear enamel hypoplasia was noticed on one adult individual (one per ten studied teeth including an incisor and canines). All of the aforementioned graves belong to the Middle Bronze Age strata.

Human remains were found in a secondary context at the border of a large (c. 3m long) pit BA1348 and stone foundation of a house. A chamber tomb (BA1108; Miglus et al. 2011) was found in the opposite side of the house. Further exploration of a portion (area 1.5×0.7m) of the feature (BA1348) revealed a layer of disarticulated bones (Figure 1). Another layer of human remains was discovered beneath a pottery vessel and these were not explored. The position of this assemblage in the same stratum as the chamber tomb BA1108 may suggest that these human remains were removed from the chamber tomb in order to prepare the room for additional burials. Such a practice was recognised in the case of chamber tomb BA 2500 (Fetner 2014).

Eight burials were found in Area 2, four of them containing the remains of adult individuals, three containing the remains of children and one double burial that included the remains of one older and younger child. Adult individuals from the Bronze Age were affected by oral diseases, e.g. caries (3 per 3 individuals) and ante mortem tooth loss (3 per 3 individuals). One adult individual (per three) and 2 infants (per 4) exhibited linear enamel hypoplasia. In the case of an eight-year-old child, linear enamel hypoplasia coincided with *cribra orbitalia*.

Degenerative joint diseases (including osteoarthritis and Schmörl's nodes) were observed on the remains of all adult individuals. Moreover, new bone formation was noted on the remains of an adult female (BA 2728/1) that coincides with a possible



Figure 1. BA1348: the secondary burial.

hydatid cyst located in the thorax (described below). The aforementioned were dated to the Middle Bronze Age, except for the grave of one adult male that was dated to the Islamic Period. Also in this area, human remains were excavated in a secondary context in several pits, including trash, storage and looting pits.

The individual BA 2728/1, a 40-55 years old female, exhibited severe pathological changes including osteoarthritis of cervical vertebrae (one per three preserved) and one pedal phalange (per ten preserved). In the area of the lesser trochanter of the left femur new bone formation was observed (27×24mm). Carious lesions (diameter more than 3mm) were observed on the medial and distal surfaces of four preserved molars. Moreover, while exploring grave BA2728, ellipsoidal (20–30mm of longest dimensions), calcified objects were found in the thorax region. They were found lying next to each other on a layer of yellow soil and ribs (Figure 2). Morphology, size and position of the calcified objects in the thorax suggests they were a hydatid cyst, a common pathological feature of echinococcosis, caused by a tapeworm infection of the genus *Echinococcus sp.* Domesticated animals are the source of this disease: herbivores are considered to be intermediate hosts, and dogs are the ultimate hosts. The infection occurs either by direct contact with dogs or by contamination of food and water with dog faeces containing the ova of the parasite. The liver and lungs are most commonly affected, but the parasite may also enter into bones. In affected tissue, the larvae create a cyst that is usually well tolerated by the infected organism (Ortner 2003: 337–340).



Figure 2. BA 2728: grave with ellipsoidal objects (indicated by arrows).

The proposed identification can be supported by archaeozoological data from Bakr Awa. In the collection of animal remains from the Middle Bronze Age layers include the remains of sheep, goat, cattle and dog (J. Piątkowska-Małecka, personal communication), the animal taxa recognized as hosts of *Echinococcus* sp. At this point other possible identifications (cf. Waters-Rist et al. 2014) cannot be excluded and further study requires differential diagnosis involving histological and biochemical analysis of the calcified objects and surrounding yellow soil.

As mentioned previously, Area 5 contained one partly destroyed Islamic grave of an adult. Degenerative changes were observed on the bodies of two thoracic vertebrae (spondylosis and Schmörl's nodes). Moreover, in two cases the medial and distal phalanges of the foot were fused, probably as result of prolonged osteoarthritis or a fracture. The midshaft of the left femur presented evidence of gnawing.

In summary, during the 2014 season fourteen graves containing the remains of at least 16 individuals were explored. Additionally, single human bones were retrieved from seven non-burial pits. Among the individuals from the Middle Bronze Age the most common pathological changes included dental pathological conditions like linear enamel hypoplasia (3 per 7 individuals), carious lesions (2 per 6 individuals) and ante mortem tooth loss (2 per 6 individuals). Two per four individuals were affected by osteoarthritis and one (per three individuals) had developed Schmörl's nodes. *Cribra orbitalia* were observed in two cases per four individuals.

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