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Arkadiusz Sołtysiak

Short introduction to the bioarchaeological studies at Tell Barri (Pl. 165)

When excavating any archaeological site, not only a cemetery, but also a settlement, the excavator should expect that among the remains of human cultural activity there will be found also some remains of human beings themselves. It is especially true in Mesopotamia where the sites usually consist of many strata of occupation representing hundreds or even thousands of years, during which quarters of houses sometimes turned into cemeteries or funeral customs allowed the burials in still inhabited areas. Human remains, bones and teeth, are important source both for archaeologists interested in burial practices and post-depositional processes (taphonomy of human remains), and for physical anthropologists (see **Diagram 1**).

There are three main kinds of questions which can be asked by an anthropologist studying human bones from an archaeological site. First, it is the basic characteristic of an individual whose remains have been found in a particular burial: its sex, age at death, possible injuries etc. This information may be important for the excavator who can then for example study the gender differences in grave goods or hypothesize about the reasons for exclusion of some categories of the dead from a given cemetery. From the historical and biological point of view, however, this individual diagnosis is not valuable at all, unless the number of individuals is high enough to form a sample in a statistical sense. Only if such a sample is available, the researcher may compare it with the samples from other sites and/or other periods, searching for possible spatial differences or temporal changes, e.g. in the quality of life, frequency of diseases, rate of migrations. The insight into such characteristics of the populations and their comparison with social, economical and cultural patterns broadens considerably our knowledge about the general history of the ancient peoples. The third kind of anthropological studies addresses most general questions concerning the biological characteristics of mankind, with use of selected samples from various parts of the world.

During the past 25 seasons of excavations (1980–2005), the remains of at least 79 human skeletons have been found at Tell Barri (ancient Kahat), a site located approximately midway along the road between Hassake and Qamishly in north-eastern Syria, excavated by an Italian team directed by Paolo Emilio Pecorella (University of Florence) and from 2005 by Raffaella Pierobon Benoit

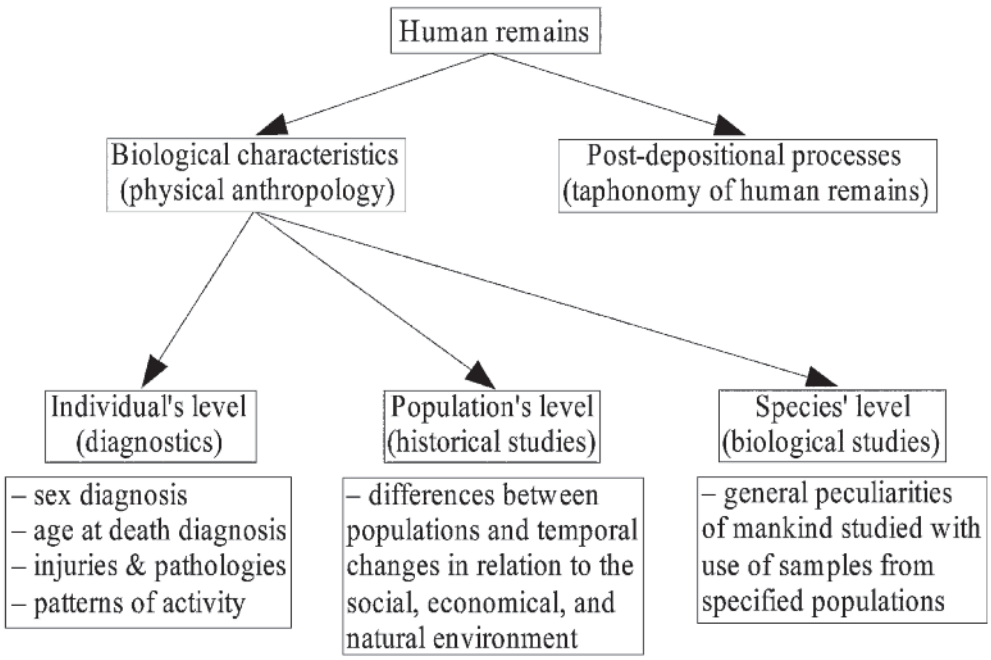

Diagram 1. General kinds of studies on human remains.

Diagram 1. Podstawowe rodzaje badań szczątków ludzkich.

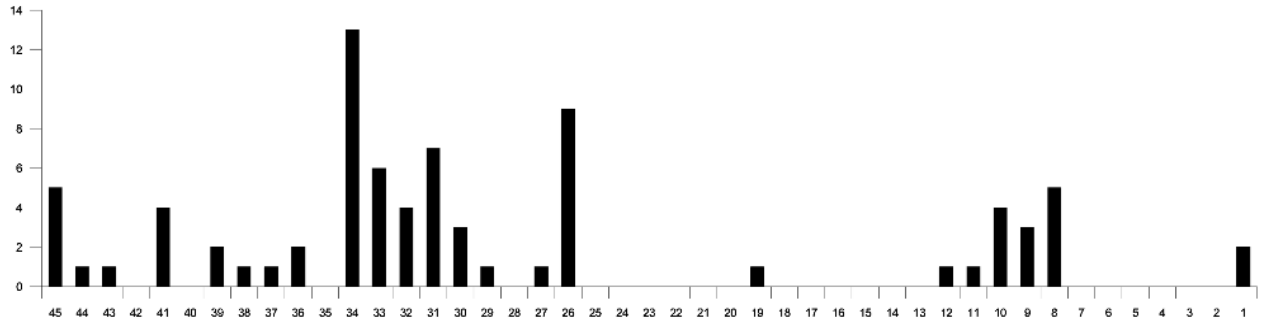

Diagram 2. Number of skeletons found in specified levels from 1 (surface) down to 45 (earliest phases of occupation excavated so far at the site).

Diagram 2. Liczba szkieletów pochodzących z warstw od 1 (powierzchnia) do 45 (najstarsza faza zasiedlenia stanowiska).

(University of Naples Federico II). The oldest settlement in the closest neighbourhood of Tell Barri is dated to the Halaf period, but the site itself was inhabited without any hiatus since the beginning of the Early Bronze Age until the Parthian and Roman periods.

The number of 79 burials is not very impressive but the skeletons – although poorly preserved, as usually in the Near East – are quite complete. They did not belong to one homogenous population, but may be divided into several temporal samples (**Diagram 2**), dated to the wide range of periods between the Early Bronze Age and Achaemenian times. There are at least six distinct samples, related to the Early Bronze Age (levels 45–39, N=13), the Middle Bronze Age (levels 34–33, N=12), the Old Babylonian period (levels 32–30, N=12), the Middle Assyrian period (levels 34–33, N=4), the Neo-Assyrian period (levels 27–12, N=11), and the Achaemenian period (levels 11–8, N=13).

In the autumn of 2005 the bones of 40 individuals dated to the Early Bronze Age, the Middle Assyrian, the Neo-Assyrian, and the Achaemanian periods were studied in the dig house at Tell Barri. The present short paper contains some selected preliminary observations on these bones, which are the examples of all four defined above categories of studies on human remains.

Taphonomy of human remains: a strange case of cremation

The reconstruction of post-depositional history of human remains is possible only if there is available a precise documentation of the position of the bones and of their context. The bones themselves, deprived of their original context, are not sufficient source for taphonomical studies. Fortunately, the burials found at Tell Barri are well documented.

Most interesting case is the individual buried in the grave No. 895, found in the Neo-Assyrian cemetery and recognised as a 11/12 years old child. Its bones were burned, especially those in the central part of the body (lumbar vertebrae and hands) and the face (cf. **Fig. 1**). Such observation was completely unexpected, because so far cremation has been found only in single cases out of ten thousands of burials ever excavated in the whole territory of Mesopotamia (cf. Barrelet 1980: 4) and only in the single site of Yarim Tepe in the Halaf period such burial custom seemed to be not accidental (Merpert, Munchaev 1993). Almost complete absence of cremation in Mesopotamia may be explained in economical terms, as the result of shortage of wood in that area, but there is also religious reason underlined in the following passage in the Sumerian story *Gilgameš, Enkidu and the Nether World: "Did you see him who was set on fire?" "I did not see him. His spirit is not about. His smoke went up to the sky"* (v. 301–303; transl. Black et al. 2005). Thus, at least in southern Mesopotamia about the turn of the 3rd millennium BC the cremation was thought to destroy not only the body, but also the *gidim* – spirit of the dead.

However, the case of the individual 895 from Tell Barri is even more complicated, because the burned skeleton was found in anatomical position, with undisturbed articulations. The body was buried in two large jars joined by their rims. The hypothesis that it had been burned inside those jars was rejected, because no traces of ashes were observed in the filling and the inner surface of the jars showed no traces of burning. It was for sure not the case of an intended cremation, but rather a strange accident. The jars were well closed with use of some bitumen and the body inside de-cayed in the empty space. Some time after the burial a fire was installed on the ground just above the grave and the jars covering the defleshed bones became a kind of an oven. Some ashes of this fire were found during the excavations (Stefano Valentini, pers. comm.) and it is likely that there was no relation to any funeral practices, but rather a purely accidental coincidence. The elevated temperature, which may have been observed in the grave for a quite long time, was high enough to burn the bones but left no traces on the jars. Summing up, this unusual case confirms that the cremation was not practised in Mesopotamia and every find of burned human bones must be studied

with great care instead of being automatically labelled as an example of intentional cremation.

Individual diagnostics: bias in the mortality of children

Individual's sex and age at death are the most basic pieces of information provided by the students of human remains. However, this task is not as easy as one might expect. In the case of children the sex diagnosis is completely impossible, but the age at death may be determined quite precisely on the base of dentition. The diagnosis of adult remains is most reliable when based on a complete pelvis (or at least the area of pubic symphysis), but without this part of skeleton it is a real challenge. There are many methods of sex diagnosis which use some landmarks on the skull or measurements of other bones, but since they were developed and tested chiefly on European and North American populations, their results may be not adequate in the Near East. For example the observation of glabella, mastoid process, mental eminence, or nuchal crest does not allow us to distinguish males from females in a reliable way, although in North America and Europe all these morphological features are widely used for sex diagnosis with quite good results (cf. Bass 1995: 85–86).

The distribution of sex and age at death in studied chronological samples from Tell Barri is shown in **Table 1**. There is no significant difference between the number of male and female individuals, which would be the result of either the inadequacy of diagnostic method or burial customs. In contrast, the age distribution is significantly different in the samples, in spite of their small size: there is a distinct surplus of newborn children in the Early Bronze Age and an equally distinct surplus of older children in the Neo-Assyrian period. It is unlikely, however, that such a pattern reflects actual difference in the mortality of children between those two samples. In general, any demographical research based on human remains found at the archaeological sites is not reliable due to non-random character of the sample, resulting from burial practices, post-depositional processes, and the excavation process itself. In the discussed case the difference between the EBA and the Neo-Assyrian period most likely reflected the burial practice. The skeletons of the newborn children from the EBA have been found in a very particular context, just beneath the floors of buildings interpreted as possible shrines. For sure it was not an actual cemetery. More mysterious is the case of the Neo-Assyrian sample with so many older children. Their remains were found in a cemetery together with the skeletons of three old males and also here the bias in sex and age distribution is evident. However, the reason of this peculiarity is not possible to explain with use of only this evidence.

Historical study: what they ate

The possibility of historical studies on ancient populations depends upon the size of available samples from these populations. If the sample size is small, as in the case of Tell Barri, only very robust questions may be answered and only the most evident differences between populations detected. However, even less precise pieces of information are better than no information at all.

Very rough insight into the temporal changes in the quality of life is possible with use of the frequency analysis of dental caries and enamel hypoplasia. High frequency of dental caries is a reliable indicator of good diet rich in sugars, especially in sucrose (Hillson 1996: 278). The interpretation of the enamel hypoplasia is not so simple, but this defect is usually thought to be a result of malnutrition or other kind of metabolic stress (especially related to severe diseases) during the childhood, in the time when enamel of permanent teeth was formed (Goodman, Rose 1991; Hillson 1996: 166). The frequencies of caries and enamel hypoplasia in three chronological samples are shown in **Diagrams 3** and **4**. In spite of small sample sizes there are noticeable differences between both diagrams. The frequency of caries was relatively high in the Early Bronze Age (cf. one example in **Fig. 2**), very low in the Neo-Assyrian period and the highest in the Achemaenian period. A reversed pattern may be observed in the frequency and the degree of enamel hypoplasia, which were both the highest in the Neo-Assyrian period and the lowest in the Achemaenian period.

Table 1. Distribution of age at death in the chronological samples.

Tabela 1. Liczebność poszczególnych kategorii wiekowych w grupach chronologicznych.

Chronology	*0–5.9*	*6–13.9*	*14–21*			*adults*		
			M	?	F	M	?	F
EBA	•••••••	•				••	•	••
M.Assyr.	••		•				•	
N.Assyr.	•	•••••				•••	••	•
Achaem.	•					•••	••	••

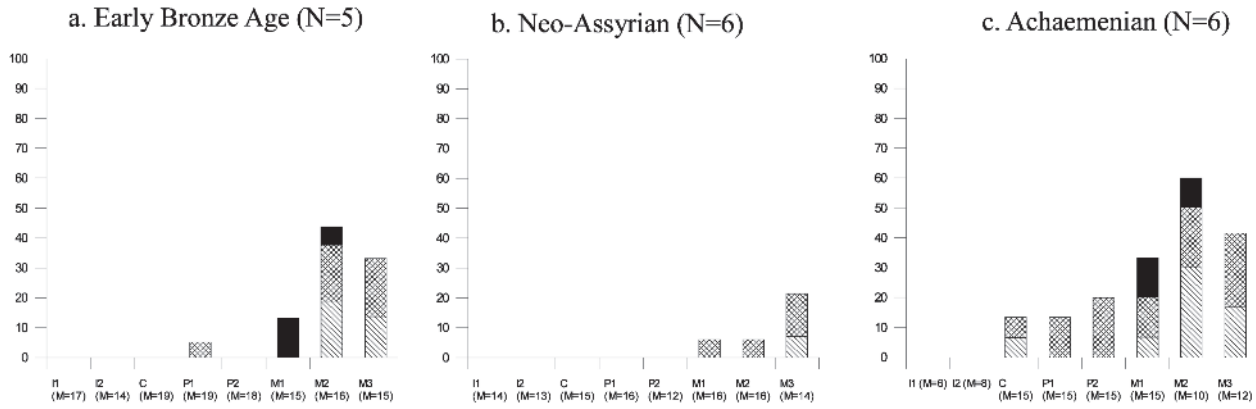

Diagram 3a–c. Frequency of carious lesions in the chronological samples (– small carious lesions, – carious lesions >2 mm in diameter, – greater part of the crown destroyed by the caries). N – number of individuals, M – number of teeth.

Diagram 3a–c. Liczebność zębów z próchnicą w grupach chronologicznych (– niewielki ubytek, – ubytek o śr. ponad 2 mm, – ubytek obejmujący większą część korony zęba). N – liczba osobników, M – liczba zębów.

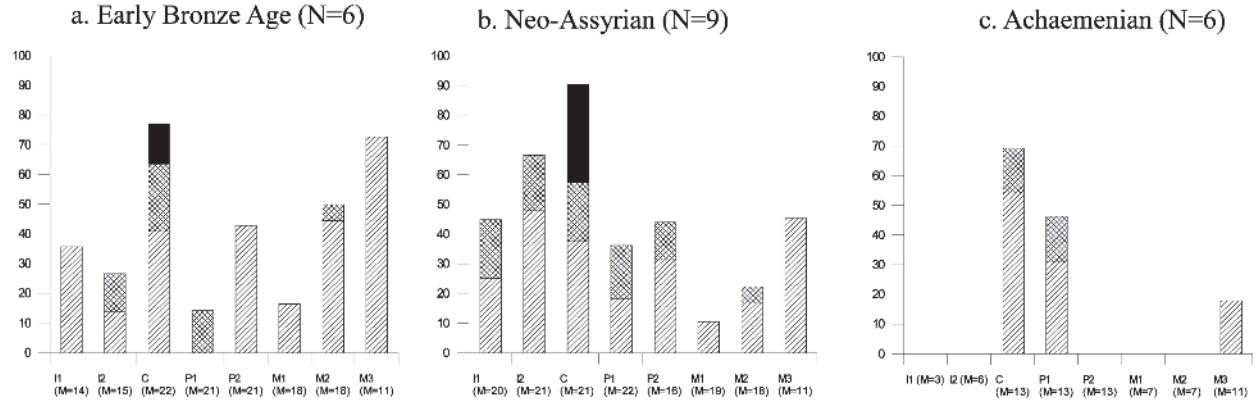

Diagram 4a–c. Frequency of enamel hypoplasia in the chronological samples (– little irregularity of surface or minimal horizontal lines, – moderate horizontal lines, chiefly in lower part of the crown, – distinct horizontal lines). N – number of individuals, M – number of teeth.

Diagram 4a–c. Liczebność hipoplazji szkliwa w grupach chronologicznych (– niewielkie nieregularności powierzchni szkliwa lub minimalne linie, – wyraźna hipoplazja liniowa, głównie w dolnej części korony, – bardzo wyraźna hipoplazja liniowa). N – liczba osobników, M – liczba zębów.

All these pieces of evidence suggest the highest quality of life in the Achemaenian period, relatively high quality of life in the Early Bronze Age and the lowest one in the Neo-Assyrian times. Such a pattern is rather unexpected, because the Neo-Assyrian city at Tell Barri was very important as the regional administrative center with the palace of Tukulti-Ninurta (Pecorella 1998). Also the Neo-Assyrian graves were well done and no archaeological evidence suggests that the contemporary inhabitants of the site were poorer than their predecessors or successors. It is difficult to solve this problem without larger sample, but it may be tentatively hypothesised that the low frequency of caries and the high frequency of enamel hypoplasia reflected economical problems in Neo-Assyrian times which made the quality of food lower and the quantity less predictable than in the other two periods.

Biological study: the difficult study of sexual dimorphism

One of the greatest challenges in physical anthropology is the reliable sex diagnosis of incomplete and fragmented skeletons. In the Near East both pelvis and skull are frequently broken into small pieces or destroyed and reliable diagnosis with use of standard methods is impossible. However, some small bones, like patella or talus, may be more likely found unbroken. It is useful then to study the degree of sexual dimorphism in as many parts of skeleton as possible in order to find such measurements which have the greatest possible discrimination power. Such kind of research may use the samples from the whole world population or focus only on one region, although the best idea

Table 2. Sex differences in selected measurements and the diagnostic scales based on the sample from Tell Barri.

Tabela 2. Różnice między płciami w wybranych pomiarach kości oraz skale do diagnostyki płci opracowane na podstawie próby z Tell Barri.

Measurement	*Males*		*Females*		*Sex diagnostic scales*				*Diagnosis*				
	mean (N)	S.D.	mean (N)	S.D.	F	F?	M?	M	M as M	M as F	F as F	F as M	% of correct
patella – height	41.4 (4)	3.04	38.2 (5)	1.68	...–38.2	38.3–39.1	39.2–41.3	41.4–...	3	1	3	2	66%
patella – breadth	47.3 (6)	4.59	40.2 (5)	2.80	...–40.2	40.3–42.8	42.9–47.2	47.3–...	5	1	4	1	82%
talus – art. length	35.5 (3)	1.32	31.8 (5)	0.84	...–31.8	31.9–33.4	33.5–35.4	35.5–...	3	0	5	0	100%
humerus – dist. br.	64.5 (5)	4.69	55.2 (3)	2.75	...–55.2	55.3–58.8	58.9–64.4	64.5–...	5	0	3	0	100%

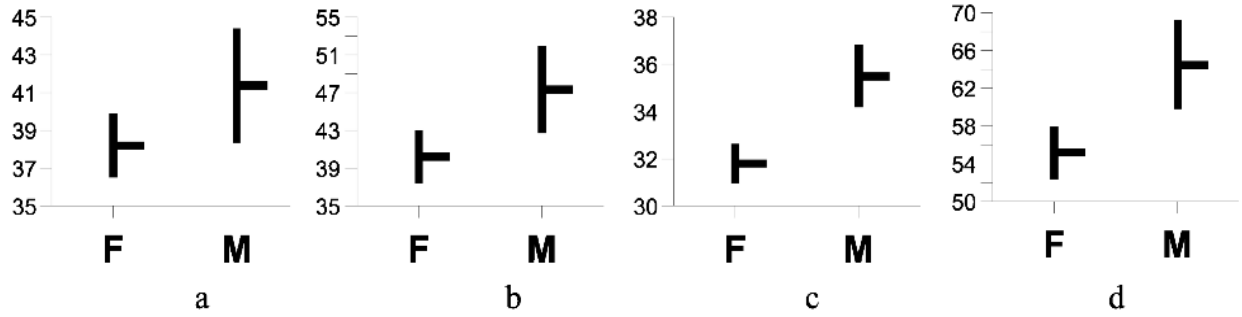

Diagram 5. Sex differences in selected measurements: a. height of patella, b. breadth of patella, c. length of talar auricular surface, d. epicondylar breadth of humerus.

Diagram 5. Różnice między płciami w wybranych pomiarach kości: a. wysokość rzepki, b. szerokość rzepki, c. długość górnej powierzchni stawowej kości skokowej, d. szerokość nadkłykciowa kości ramiennej.

is to check out both the worldwide diagnostic value and regional differences in the dimorphism. It is always a possibility that some diagnostic methods developed for one regional population are not relevant or even misleading when used for the diagnosis of remains from another region.

The sample from Tell Barri is too small to construct reliable diagnostic scales and should be pooled together with other samples. None the less, the general idea of this kind of studies may be illustrated with use of data from this site. Four measurements of all skeletons of known sex (based on observation of pelvis), namely the height and the breadth of patella, the length of talar articular surface, and the epicondylar breadth of the humerus, have been taken into account. In all cases the average value of all measurements in males was greater than in females (cf. **Table 2**), but the relative difference between the means appeared to be the smallest in the height of patella and the greatest in the length of talar articular surface (the **Diagram 5**). The diagnostic scales were based on these means and tested on the measurements which were used in their construction. Both measurements of patella turned out to be not efficient in sex diagnosis, but the greatest length of female talar articular surface and the epicondylar breadth of humerus appeared to be smaller than the smallest respective measurements of the male individuals. It is then likely that these two last characteristics will be valuable in sex diagnosis, after testing on larger regional or worldwide sample.

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Krótkie wprowadzenie do badań bioarcheologicznych na Tell Barri

Podczas wykopalisk na stanowiskach osadniczych w Mezopotamii często znajdowane są ludzkie pochówki. Na stanowisku Tell Barri (starożytne Kahat) w latach 1980–2005 włoska misja archeologiczna odkryła co najmniej 79 szkieletów, z czego 40 zostało przebadanych jesienią roku 2005. Próba nie jest liczebna, ale można na jej przykładzie przedstawić różne rodzaje analiz wykonywanych przez bioarcheologów.

W grobie nr 895, datowanym na okres nowoasyryjski, odkryto przepalone kości dziecka w niezaburzonym układzie anatomicznym. Na pewno nie był to typowy pochówek ciałopalny; kości zostały prawdopodobnie przepalone dopiero po pogrzebaniu osobnika, zapewne w wyniku funkcjonowania dużego paleniska, zlokalizowanego bezpośrednio nad podwójnym naczyniem zawierającym ciało. Szczątki ludzkie z Tell Barri odkrywano w wielu warstwach, m.in. datowanych na wczesną epokę brązu, okres środkowoasyryjski, okres nowoasyryjski oraz okres achemenidzki. Najwcześniejsze pochówki zawierają przeważnie szczątki noworodków pochowane w specyficznym kontekście, pod podłogami pomieszczeń o charakterze sakralnym, co może mieć związek ze znanym z sumeryjskiej opowieści o Gilgameszu zróżnicowaniem pośmiertnych losów małych dzieci i osób dorosłych.

Szczątki ludzkie pochodzące z czterech wyróżnionych okresów zasiedlenia Tell Barri charakteryzują się dużą zmiennością frekwencji próchnicy, związanej ze spożyciem cukrów, oraz liniowej hipoplazji szkliwa, która jest jednym ze wskaźników stresu środowiskowego. Największa różnica występuje między okresami nowoasyryjskim (mało próchnicy i częsta hipoplazja) i achemenidzkim, co można zinterpretować jako efekt problemów ekonomicznych we wcześniejszym okresie.

Na próbie szczątków ludzkich z Tell Barri można też było przetestować niektóre metody określania płci na podstawie pomiarów kości; okazało się, że długość powierzchni stawowej kości skokowej i szerokość nadkłykciowa kości ramiennej lepiej różnicują kobiety i mężczyzn niż pomiary rzepki.

PLATE 165

Fig. 1. Burned bones of the individual from the grave 895 (Neo-Assyrian period) (photo A. Sołtysiak).
Ryc. 1. Przepalone kości osobnika z grobu 895 (okres nowoasyryjski).

Fig. 2. Cariotic teeth of the individual from the grave 1554 (EBA) (photo A. Sołtysiak).
Ryc. 2. Zęby z ubytkami próchniczymi, osobnik z grobu 1554 (wczesna epoka brązu).