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## PRELIMINARY REPORT ON HUMAN REMAINS FROM TELL ARBID, SECTOR P. EXCAVATION SEASONS 2008–2010

### Archaeological background

Three seasons of fieldwork in Sector P on the eastern slope of Tell Arbid (**Fig. 1**) were carried out by the Mission of the Institute of Prehistory, Adam Mickiewicz University, headed by R. Koliński, within the framework of the Polish-Syrian Mission to Tell Arbid<sup>1</sup> in the years 2008–2010.

During three seasons of fieldwork a considerable number of graves was discovered. Most of them, namely 30 graves, belong to the Middle Bronze Age (MBA, ca. 2000–1500 BC).<sup>2</sup> The second in number is a group of 17 graves dated to the Early Bronze Age IV (EBA IV, ca. 2150–2000 BC).<sup>3</sup> The only earlier grave discovered (G1/38/60) is of the Ninevite 5 Period (EBA II, ca. 2750–2550 BC).<sup>4</sup>

The graves of the Khabur Ware Period form two chronological groups. The later one consists of one very damaged chamber grave discovered in 2008 (G1/38/61), while two more graves belonging to this group were unearthed in 1999 and 2001 (G3/36/62 and G1/37/60). They cut into the walls and floors of the houses dated to the MBA II Period, and follow different orientation than the earlier graves. Although no burial gifts were recovered from these graves, they could be tentatively dated to the last part of the MBA, i.e. MBA III (ca. 1700–1500 BC). The earlier group includes all the other graves, and could be extended by adding a few graves discovered in the area during the previous work (the seasons 1998 and 1999). The graves formed three clear clusters (described as cemeteries) located outside of the contemporary houses; there are, however, some dispersed burials which at the moment

could not be included into any of them (**Fig. 2, Table 1**). Five different grave forms could be evidenced:

1. Vaulted chamber graves were the largest mortuary structures composed of an underground chamber of mud brick, measuring inside more than 2 m in length and 1 m in width and up to 1.35 m in height, to which a vertical shaft led from the surface. The chamber was covered by a vault of regular square bricks (**Fig. 3**). Graves of this type were meant for multiple use; in fact G7/36/72 held not less than 14 skeletons.
2. Chamber graves covered with a ceiling built of vertically set bricks whose corners rested on longer walls of grave chamber (laid “in diamond”). Graves of this kind were provided with a single row of bricks (**Fig. 4**) and served usually for a single burial. Variations from this standard represented: grave G1/37/63, provided with a shaft, used for four subsequent burials; grave G2/37/59-60 which most likely had a ceiling composed of three rows of vertical bricks, a shaft and accommodated at least two burials, as well as G6/35/60 with a similar ceiling (**Fig. 5**), but used for a single burial only.
3. Shaft graves, featuring a rectangular or, more rarely, a round shaft, on whose bottom a niche was cut into one of the sides. This niche was used to accommodate a vessel containing the body and burial gifts, and in most cases it was blocked with bricks (**Fig. 6**).
4. Pit graves, where a vessel was deposited on the bottom of the shaft.
5. Inhumation graves, where the body was deposited on the bottom of the shaft, without any container to hold it.

<sup>1</sup> The Mission is directed jointly by Prof. Piotr Bieliński of the University of Warsaw, and Mr. Jowan Kasim (replaced in 2010 by Dr. Abdel Messih Baghdo) from the Regional Office of the Directorate of Antiquities and Museums of Syria.

<sup>2</sup> Other chronological terms used are: the Khabur Ware Period,

or the Old Jezirah Period.

<sup>3</sup> In other terms the Post-Akkadian or the Early Jezirah V Period.

<sup>4</sup> Sometimes designated the Ninevite V or the Early Jezirah II Period as well.

Table 1. Distribution of various grave forms among the cemeteries excavated in Sector P of Tell Arbid, the Khabur Ware Period. Figures in parentheses relate to the number of graves excavated by the University of Warsaw Mission.

Tabela 1. Występowanie różnych typów grobów z okresu ceramiki chaburskiej na cmentarzyskach przebadanych w Sektorze P na Tell Arbid. Liczby w nawiasach odnoszą się do grobów odkrytych przez misję Uniwersytetu Warszawskiego.

	Northern cemetery	Western cemetery	Central cemetery	Not attributed	TOTAL
Vaulted chamber graves (Fig. 3)	G1/35/60-61 G2/35/60-61	—	G7/37/62	G1/38/61	4
Chamber graves “in diamond” (Fig. 4)	G4/35/60 G6/35/60	G2/37/59-60 G4/37/59 G5/37/59 G4/37/60 G5/37/60	—	G1/37/63	8 (+2)
Shaft graves (Fig. 6)	G5/35/60	—	G4/36/62 G1/37/62 G2/37/62 G5/37/62 G7/37/62	G2/37/61	7 (+1)
Pit burials with a vessel	G3/35/60	G3/37/59	—	G1/37/61	3
Pit inhumations	—	—	G5/36/62 G8/37/62 G9/37/62	G5/38/61 G6/38/61	5 (+1)
Not classified	G8/35/60	—	—	G4/37/62 G14/38/61	3
TOTAL	7	6 (+2)	9 (+1)	8 (+1)	30 (+4)

The cemeteries are usually composed of graves of various types; the most homogenous is the western cemetery, where exclusively chamber graves with “in diamond” ceiling and pit burials with storage vessel used as a coffin were present. The relation between the cemeteries and houses is not entirely clear. It may be, however, assumed that the northern cemetery was related to House I, the central cemetery to House II, and the western cemetery to House V. Grave G1/37/63 is most likely related to House III, as well as some graves discovered in the area east of the house by the University of Warsaw Mission in 2003, 2004 and 2005 (BIELIŃSKI 2004: 339).

The burial rites seem to be uniform. Irrespectively of the type of the grave, bodies were deposited on a side, in a contracted position, following the east-west orientation. The position of the head was determined by the position of the opening leading either to the grave chamber (if there was any) or to the burial vessel – bodies were always placed

in tomb head-first. In graves where multiple burials took place, bones belonging to bodies deposited earlier were carelessly pushed towards the far end of the chamber. In two cases (G4/37/59 and G6/38/61) secondary burials were evidenced. In these graves bones were placed forming a heap, and no grave goods were present.

Most of the graves tend to have a very poor set of burial gifts. The multiple burial graves stand out in this respect, but once the inventory is split between the number of buried individuals, it corresponds to a typical set observed in single adult graves. The standard set of equipment is composed of a single bronze pin, and a single pottery vessel (Fig. 7). In most of the graves some beads were discovered (Fig. 8), but their number varies much (from a few to as much as 120 per person). Most of the graves belonging to adult persons contained animal offering (part of a sheep or a goat including one leg, and body fragment).<sup>5</sup> The presence of “non-standard” equipment, as for instance

<sup>5</sup> A similar custom was observed in the case of other discovered Khabur Ware Period graves at Tell Arbid, cf. a paper by

J. Piątkowska-Małecka and Z. Wygnańska in the present volume (67–80).

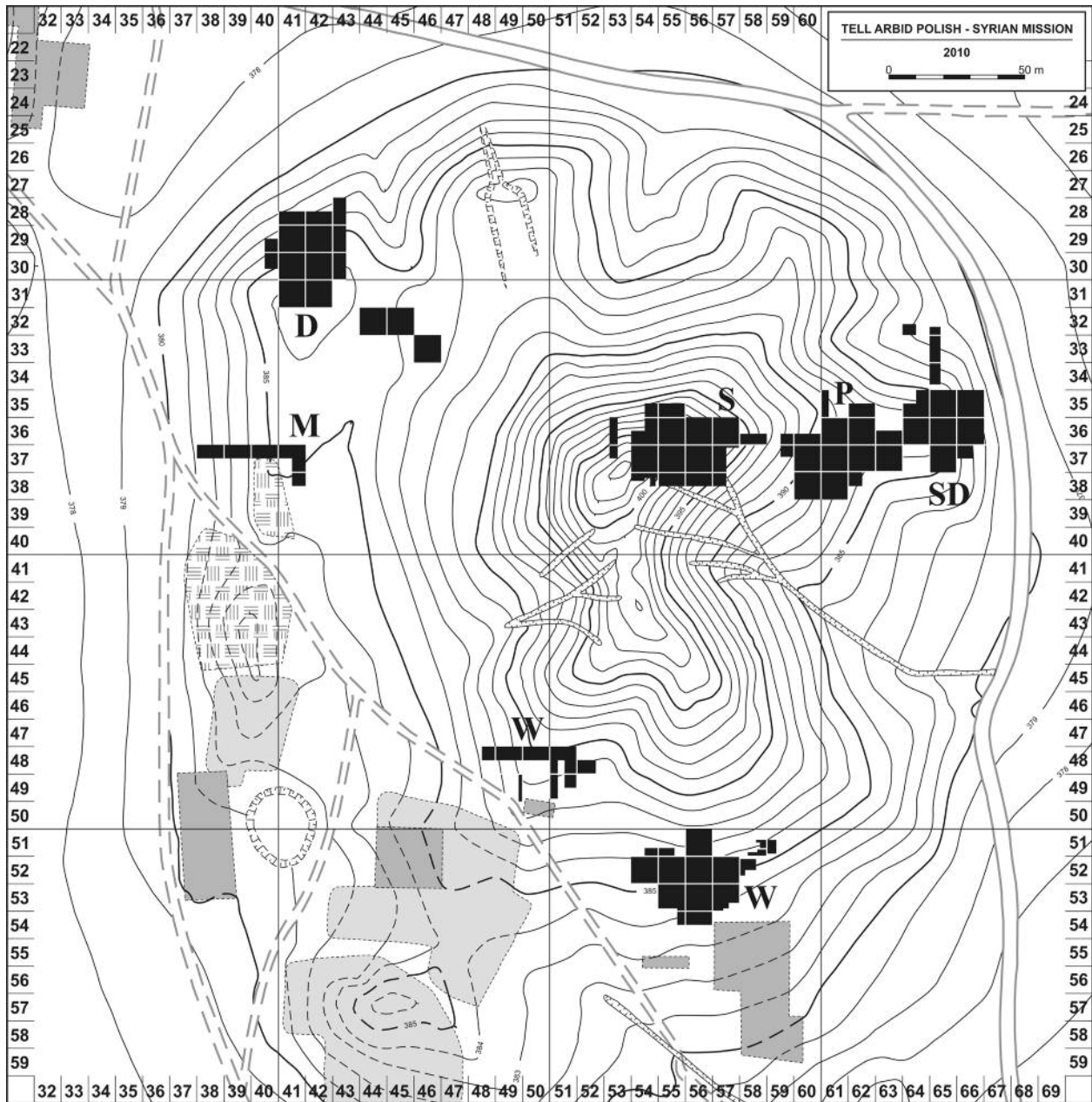


Fig. 1. Tell Arbid – main tell: contour map with the excavated areas (Drawing M. Wagner, M. Momot).

Ryc. 1. Tell Arbid – główny tell: plan wysokościowy z zaznaczonymi sektorami i wykopami.

weaponry, was limited only to the largest of chamber graves which preserved the original set of offerings (G7/37/62 and G1/37/63) and is a clear marker of a high social status of buried persons. More varying and relatively richer are burial gifts from child graves. Some of them contained a set of two bronze bracelets (G7/37/62, G4/35/60), beads and shell rings, and up to 13 vessels (the most typical is miniature jug with painted decoration; in each child's grave containing pottery at least one such vessel is present). The only cylinder seal found, discovered in shaft grave G1/37/62 containing remnants of a multiple children burial, was

deposited as an amulet, and might be a chance find, as it bears decoration typical to the mid-3<sup>rd</sup> millennium.

The Post-Akkadian graves could be divided into four groups. Pit graves of newborn babies form the first group. Dead bodies were deposited in shallow pits cutting through the floor of a room and sealed with another layer of clay plaster (G9/37/60, G9/37/61, G10/37/62, G16/38/61). They contained exclusively human bones. The second group is much more heterogeneous and consists of five pot graves (G2/38/61, G3/38/61, G8/36/61, G13/38/61, G16/38/61), usually provided with no burial gifts, three

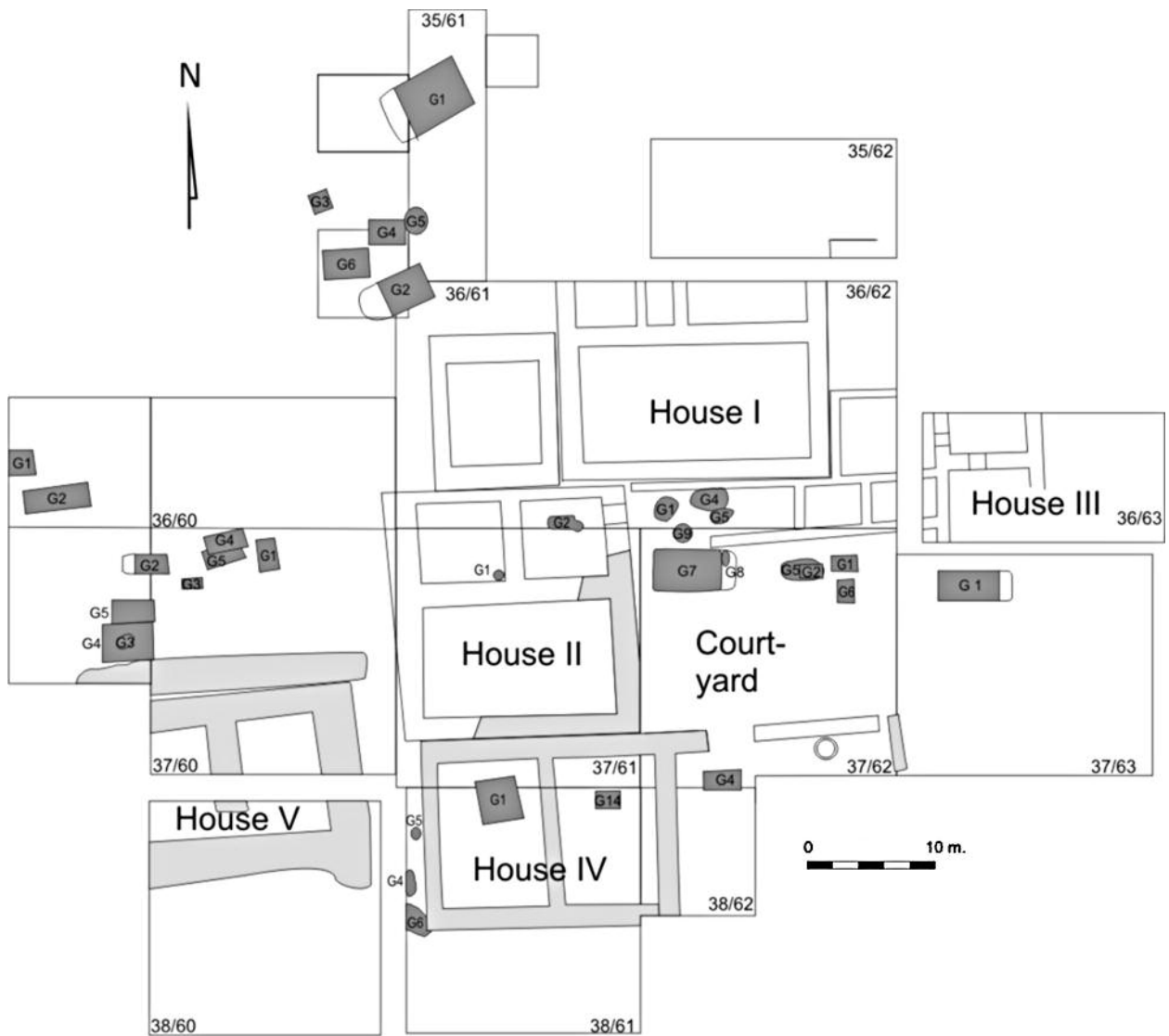


Fig. 2. Tell Arbid, Sector P, the plan of the remains dated to the Khabur Ware Period (Drawing R. Koliński).

Ryc. 2. Plan pozostałości z okresu ceramiki chaburskiej odsoniętych w sektorze P na Tell Arbid.

composite pot graves using two large fragments of different vessels (G8/38/61, G17/38/61, and G9/38/61, the least of which contained two bracelets of bronze and a necklace of beads made of shells from the Persian Gulf, frit beads in form of ducks and stone hangers). The third sub-group is composed of inhumation graves of sub-adult or adult persons (G10 and G12/38/61). They were laid in on the back and provided with at least one vessel (the richest of Post-Akkadian graves, G12/38/71 contained 3 pottery vessels, 2 bracelets, a hanger, and a ring of bronze). The last group is composed of two graves (G3/37/71 and G7/38/61) which contained disturbed remains of adult persons, buried without any gifts.

The described types of graves were differently distributed. The first group (new-born babies) was encountered exclusively in buildings, under the clay floor. The remaining three groups were placed either in the open area to the south

of the Post-Akkadian complex, or were found under the western extension building (some of those could be earlier than the structure itself). On the other hand, at least two graves (G7/38/61, G10/38/61) could be later than the settlement, as they cut into ruins of the mentioned building. This distribution of grave types may be, however, accidental, because in most of the areas where the Post-Akkadian stratum was discovered, exploration has been stopped on the floor level, therefore possible graves were not explored.

Excavations in Sector P at Tell Arbid yielded a rich collection of graves, which could be related to contemporary buildings. As there is no doubt that most of the deceased persons lived and worked in the said buildings, a study of the human remains discovered in the graves could provide an unique insight into the population of Tell Arbid at the turn of 3<sup>rd</sup> millennium BC.



Fig. 3. Vaulted chamber grave, G2/35/60-61. The northern cemetery (Photo M. Szablowski).  
Ryc. 3. Grób komorowy G2/35/60-61 ze sklepieniem beczkowym, cmentarzysko północne.

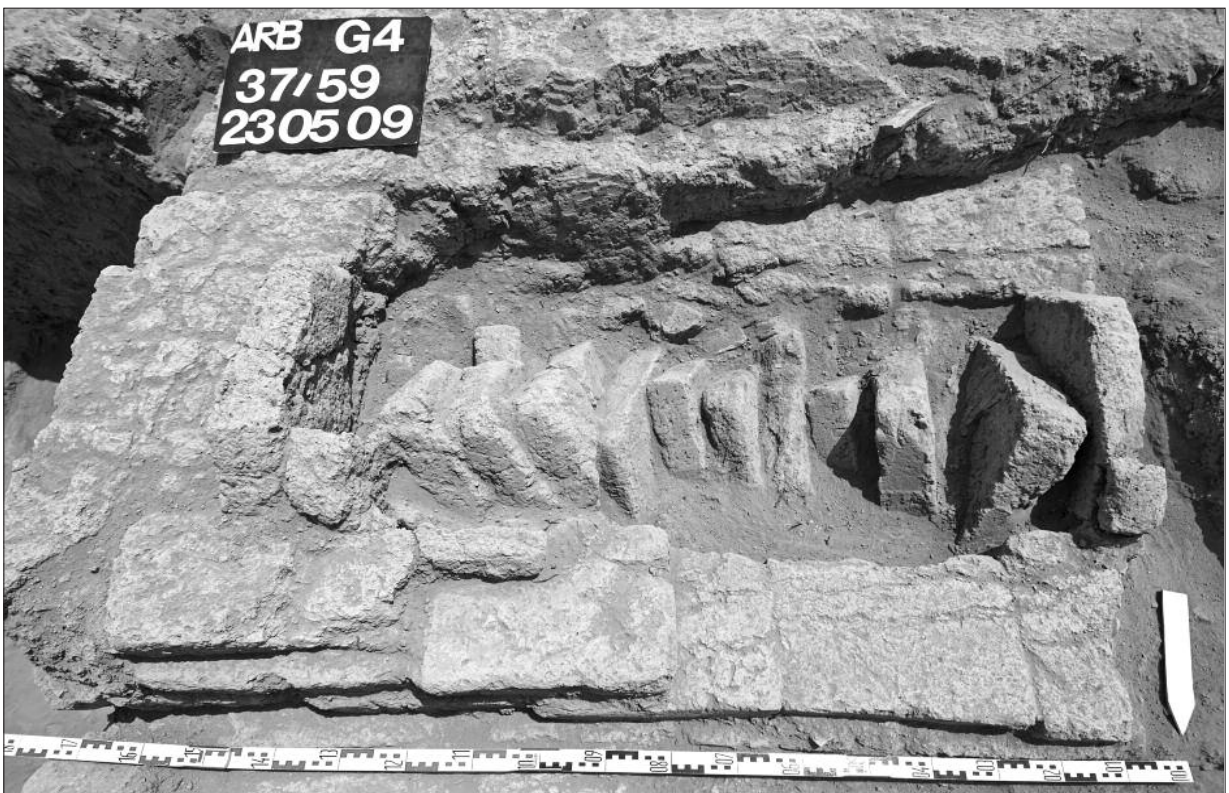


Fig. 4. Chamber grave “in diamond” with a single row of bricks, G4/37/59. The western cemetery (Photo R. Koliński).  
Ryc. 4. Grób komorowy G4/37/59 ze sklepieniem „w karo”, cmentarzysko zachodnie.

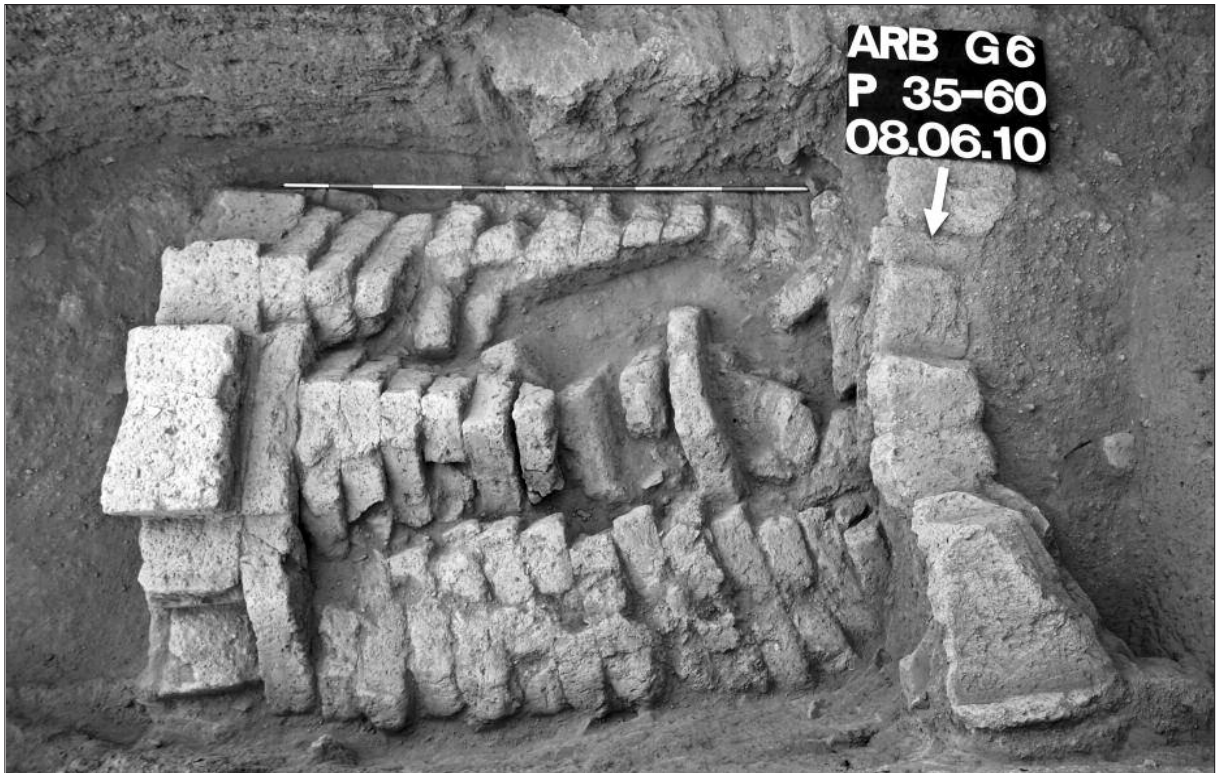


Fig. 5. Chamber grave "in diamond" covered with three rows of bricks, G6/35/60. The northern cemetery (Photo R. Koliński).

Ryc. 5. Grób komorowy G6/35/60 ze sklepieniem z trzech rzędów cegieł ułożonych „w karo”, cmentarzysko północne.



Fig. 6. Shaft grave, G2/37/62. The central cemetery (Photo J. Wierzbicki).

Ryc. 6. Grób szybowy G2/37/62, cmentarzysko centralne.

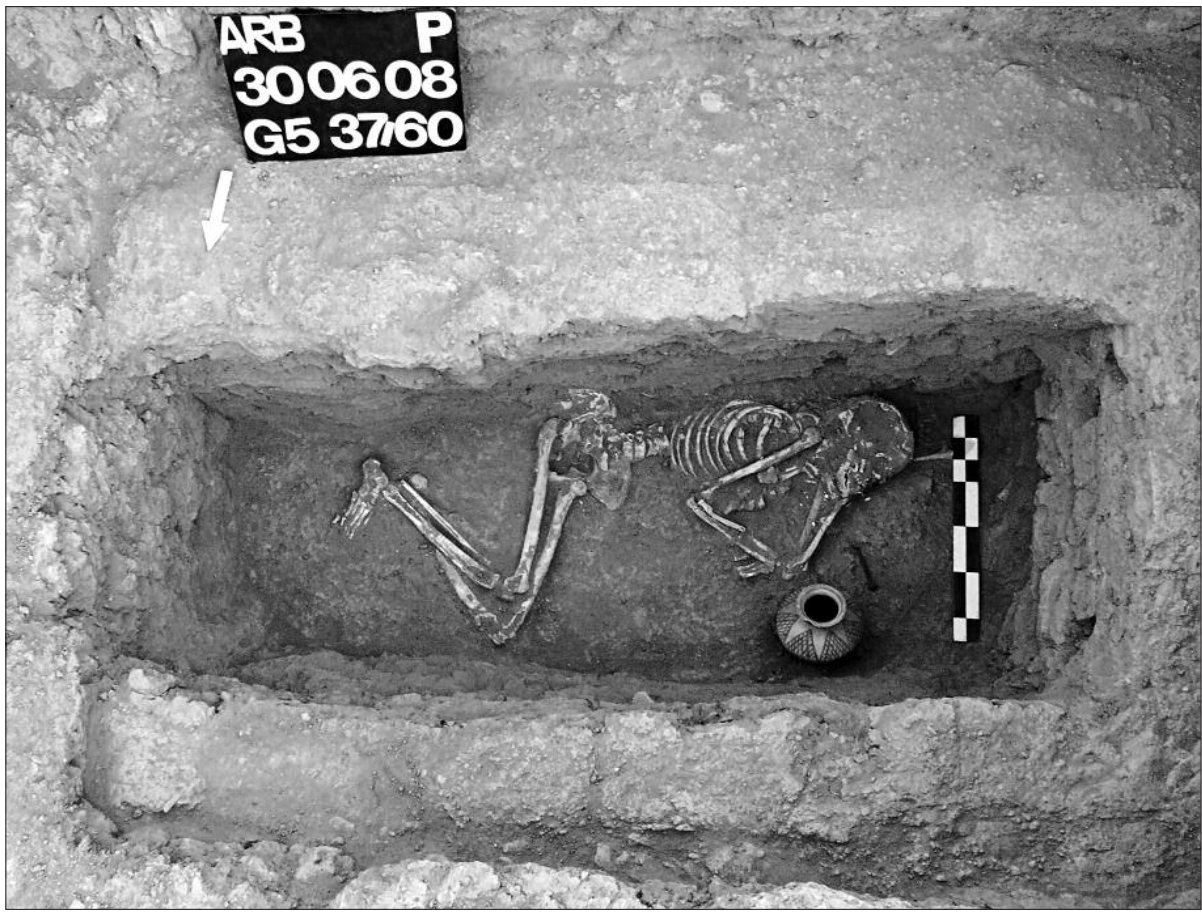


Fig. 7. Insight of chamber grave “in diamond,” G5/37/60. The western cemetery (Photo J. Wierzbicki).  
Ryc. 7. Wnętrze komory grobu „w karo” G5/37/60, cmentarzysko zachodnie.

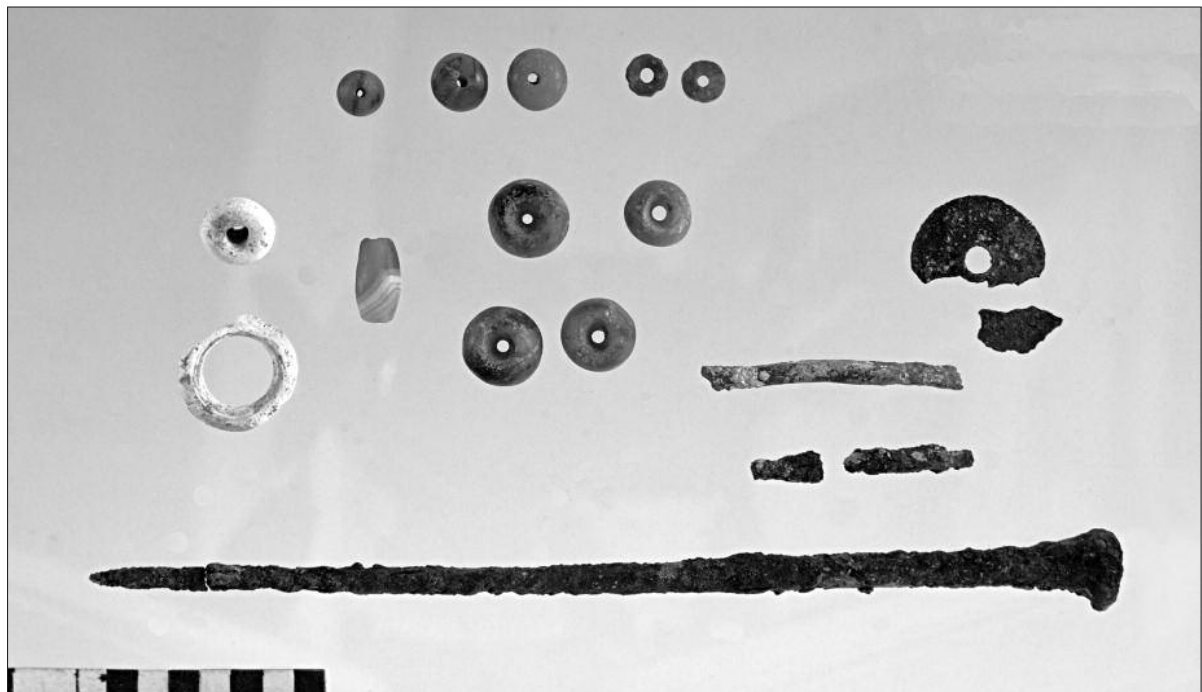


Fig. 8. Bronze pin, other metal implements, stone and shell beads discovered in the chamber of grave G2/37/59-60 (Photo J. Wierzbicki).  
Ryc. 8. Szpila i inne przedmioty z brązu oraz paciorki z karneolu i muszli znalezione w komorze grobu G2/37/59-60.

## Study of human remains

Human remains excavated in Sector P have been studied by A. Sołtysiak in the dig house during the Autumn excavation seasons 2008 and 2010. Most bones were strongly eroded and fragmented, frequently with taphonomic effects observed, as weathering, root etching, insect tunnelling, crystalline surface deposits. Each skeleton and human bone assemblage was described with the use of a questionnaire based on the protocol by Buikstra and Ubelaker (1994) which included: (1) the inventory of bones and estimation of the state of preservation, (2) basic taphonomic effects, (3) sex and age assessment, (4) a set of ~90 metric measurements, (5) a set of ~40 non-metric traits, (6) dental buccolingual and mesiodistal measurements, (7) dental wear and germ development scores, (8) observation of paleopathologies and stress markers, including dental caries, enamel hypoplasia, periodontal disease, cribra orbitalia, porotic hyperostosis, trauma, infectious disease, degenerative joint disease.

Cribra orbitalia and porotic hyperostosis were scored in 4-point scale (0 – absent, 1 – initial porosity, 2 – advanced porosity, 3 – proper cribra), linear enamel hypoplasia (only upper canines are included in this report) was scored in 4-point scale (0 – absent, 1 – non-palpable lines, 2 – one palpable line, 3 – two or more palpable lines). Osteoarthritis (OA) and spondylosis were scored in 3-point scale (0 – absent, 1 – small or medium osteophytes, initial

porosity, initial irregularity of the articular surface, 2 – large osteophytes, macroporosity, eburnation).

In total, any human remains have been found in 61 archaeological contexts, including single primary burials, multiple primary and secondary burials and small secondary bone assemblages. There were remains of at least 92 individuals and 12 small human bone deposits (**Table 2**). As many as 73 skeletons came from the Khabur Ware Period strata, 18 from the Post-Akkadian Period and only one from the Ninevite 5 Period.

Both the Post-Akkadian and Khabur Ware Period chronological subsets show clear age and sex bias. The Post-Akkadian subset is roughly consistent with the regular mortality profile (regular and catastrophic mortality profiles after Model West, cf. COALE ET AL. 1983), and only the number of adult individuals is much lesser than expected. It is likely then that chiefly infants were buried in the intra-mural contexts and a burial place elsewhere was secured for adult bodies.

A completely different mortality profile is shown by the Khabur Ware Period subset. This time the number of adult individuals is much higher and consistent with both regular and catastrophic profiles, and the number of older children and adolescents shows a very low value typical for the regular mortality profile. However, the number of younger children (1–5 years old) is much higher than expected in both theoretical profiles (**Fig. 9**).

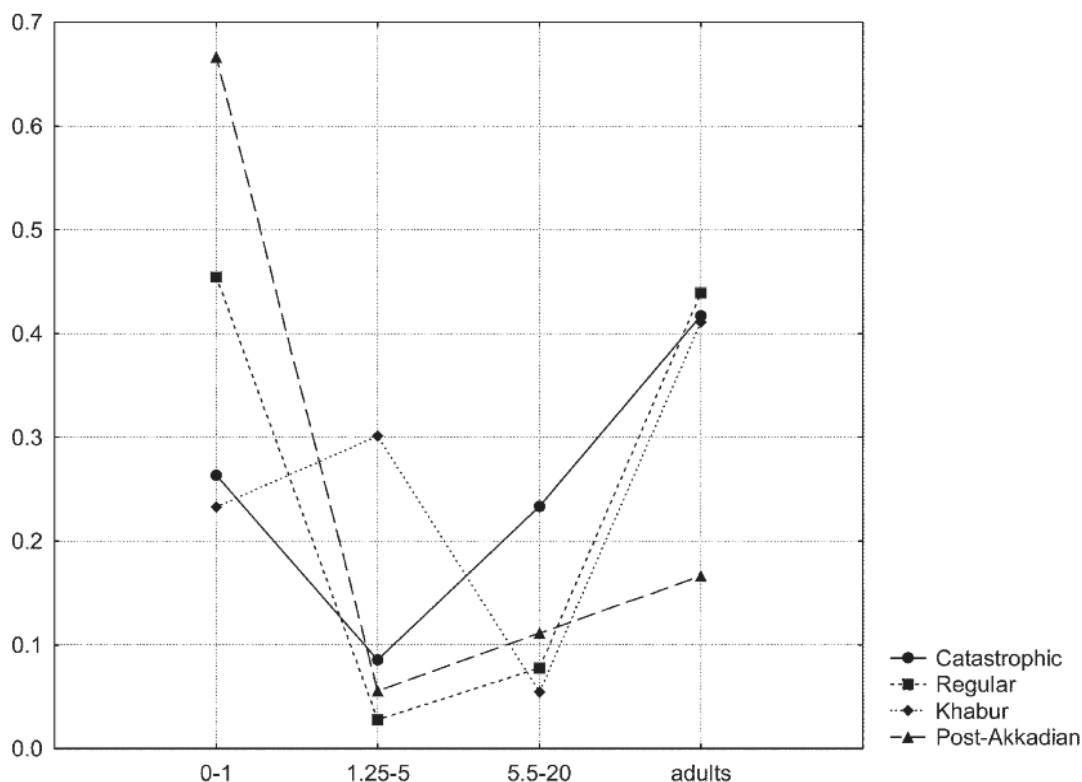


Fig. 9. Mortality pattern in the Post-Akkadian and Khabur Ware Period subsets compared with regular and catastrophic mortality patterns. Ryc. 9. Liczebność osobników zmarłych w poszczególnych kategoriach wiekowych, w zbiorach szkieletów z okresu post-akadyjskiego i okresu ceramiki chaburskiej, porównana z naturalnym i katastroficznym wzorcem umieralności.



Table 2. General catalogue of human remains excavated at Tell Arbid, Sector P (“Khabur” – Khabur Ware Period).  
 Tabela 2. Ogólny katalog szczątków ludzkich znalezionych w sektorze P na Tell Arbid („Khabur” – okres ceramiki chaburskiej).

	Square	Locus	Season	Chronology	Context	Sex	Age	Skull	Teeth	Upper limb	Trunk	Pelvis	Lower Limb	Cribrra Orbitalia	Pototic Hyperostosis	Dental Caries	Enamel Hypoplasia	OA upper limb	OA lower limb	OA spine	Spondylosis
1	35/60	G3	2010	Khabur	single burial	—	0.75	+	+	+	+	+	+	0							
2	35/60	G4	2010	Khabur	single burial	—	3	+	+	+	+	+	+	0	0	0/9	3				
3	35/60	G5	2010	Khabur	single burial	—	3	+	+	+	+	+	+	0	0	0/5	3				
4	35/60	G6	2010	Khabur	single burial	F	40–50	+	+	+	+	+	+	0	0	3/31	0	0	0	0	0
5	35/60	G7/1	2010	Khabur	small bone assemblage	?	adult	+	+	+	+		+		0/8						
6	35/60	G7/2	2010	Khabur	a single bone fragment	—	7–14	+													
7	35/61	G1	2009	Khabur	single burial	F??	young ad.		+	+	+	+	+	0		0/5	3	0	0	1	2
8	35/61	G2/1	2008	Khabur	multiple burial	M??	adult														
9	35/61	G2/2	2008	Khabur	multiple burial	?	adult									0/8		0	0	0	0
10	35/61	G2/3	2008	Khabur	multiple burial	?	young ad.														
11	36/61	G3/1	2010	Khabur	single burial	—	0	+	+	+	+	+	+								
12	36/61	G3/2	2010	Khabur	single burial	—	0	+	+	+	+	+	+								
13	36/62	G4	2009	Khabur	single burial	?	adult	+	+	+	+	+	+	0	1	0/28	2	0	0	0	2
14	36/62	G5/1	2009	Khabur	a few bone fragments	?	adult														
15	36/62	G5/2	2009	Khabur	a few bone fragments	—	3	+	+	+	+	+	+			0/1					
16	36/62	G5/3	2009	Khabur	a few teeth	—	3		+								3				
17	36/62	G5/4	2009	Khabur	a few teeth	—	3		+												
18	37/59	G1	2009	Akk/Post-Akk?	small bone assemblage	?	adult	+	+	+	+	+	+	0		0/13	2	1			2
19	37/59	G3/1	2009	Khabur	single burial	—	0.75	+	+	+	+	+	+	0	0						
20	37/59	G3/2	2009	Khabur	a single tooth	—	4–6		+							0/1					
21	37/59	G4	2009	Khabur	disturbed burial	F??	old adult	+	+	+	+	+	+	0	0			1	1	2	1
22	37/59	G5	2009	Khabur	disturbed burial	F??	young ad.	+	+	+	+	+	+				3	0	0	0	0

	Square	Locus	Season	Chronology	Context	Sex	Age	Skull	Teeth	Upper limb	Trunk	Pelvis	Lower Limb	Cribrra Orbitalia	Pototic Hyperostosis	Dental Caries	Enamel Hypoplasia	OA upper limb	OA lower limb	OA spine	Spondylosis				
23	37/60	G4	2008	Khabur	single burial	F?	35-40	+	+	+	+	+	+	0		4/25	2	0		0	0				
24	37/60	G5	2008	Khabur	single burial	F?	30-35	+	+	+	+	+	+		0	5/25	2			0	0				
25	37/60	G9	2009	Post-Akkadian	single burial	—	0	+	+	+	+	+	+												
26	37/60	G10	2010	Post-Akkadian	single burial	—	0	+	+	+	+	+	+												
27	37/60	G15	2010	Post-Akkadian	disturbed burial	—	0			+	+	+	+												
28	37/60	G2/1	2008	Khabur	disturbed burial	?	adult	+	+	+	+	+	+			0/1				0	0				
29	37/60	G2/2	2008	Khabur	disturbed burial	—	12-15		+	+	+	+	+			0/20	2								
30	37/60	L27	2009		a few bone fragments	F?	30-35				+	+	+												
31	37/60	L34/1	2009	Post-Akkadian	disturbed burial	—	0	+	+	+	+	+	+												
32	37/60	L34/2	2009	Post-Akkadian	a few skull fragments	—	0	+																	
33	37/60	T188	2009		a few bone fragments	?	adult			+			+												
34	37/62	G1/1	2008	Khabur	multiple burial	—	4		Mixed bones and teeth. MNI by the number of teeth.																
35	37/62	G1/2	2008	Khabur	multiple burial	—	4													0/4	2				
36	37/62	G1/3	2008	Khabur	multiple burial	—	5														3				
37	37/62	G1/4	208	Khabur	multiple burial	—	0		+																
38	37/61	G2	2009	Khabur	single burial	—	foetus	+	+	+	+	+	+												
39	37/61	G3	2010	Post-Akkadian	single burial	F	20-25	+	+	+	+	+	+		0	0/32	1	0	0	0	0				
40	37/61	L20	2008		fragment of an ulna	?	adult		+																
41	37/61	W2	2009		a single tooth	—	7-9		+											0/1					
42	37/62	G2	2008	Khabur	single burial	—	4	+	+	+	+	+	+							0/5	2				
43	37/62	G4/1	2010	Khabur	small bone assemblage	—	10	+	+	+	+	+	+							0/9	3				
44	37/62	G4/2	2010	Khabur	small bone assemblage	—	2	+	+	+	+	+	+												
45	37/62	G4/3	2010	Khabur	a few bone fragments	?	adult	+		+			+												

	Square	Locus	Season	Chronology	Context	Sex	Age	Skull	Teeth	Upper limb	Trunk	Pelvis	Lower Limb	Cribra Orbitalia	Pototic Hyperostosis	Dental Caries	Enamel Hypoplasia	OA upper limb	OA lower limb	OA spine	Spondylosis
46	37/62	G4/4	2010	Khabur	a few bone fragments	—	1–2	+	+	+	+	+	+								
47	37/62	G4/5	2010	Khabur	disturbed burial	—	3	+	+	+	+	+	+		0						
48	37/62	G4/6	2010	Khabur	a few bone fragments	—	4	+	+							0/8					
49	37/62	G4/7	2010	Khabur	only teeth	—	2.5	+	+												
50	37/62	G5	2009	Khabur	disturbed burial	—	2	+	+	+	+	+	+	0		0/2					
51	37/62	G6	2009	Khabur	disturbed burial	—	2	+	+	+	+	+	+		0	0/2					
52	37/62	G7/1	2009	Khabur	multiple burial	—	0.75	+	+	+	+	+	+	0	0						
53	37/62	G7/2	2009	Khabur	multiple burial	—	0.5	+	+	+	+	+	+								
54	37/62	G7/3	2009	Khabur	multiple burial	—	3	+	+	+	+	+	+			0/1					
55	37/62	G7/4	2009	Khabur	multiple burial	—	4	+	+	+	+	+	+			0/4					
56	37/62	G7/5	2009	Khabur	multiple burial	—	5	+	+	+	+	+	+								
57	37/62	G7/6	2009	Khabur	multiple burial	—	7–14			+	+										
58	37/62	G7/7	2009	Khabur	multiple burial	—	0	+	+	+	+	+	+								
59	37/62	G7/8	2009	Khabur	multiple burial	F	35–40														
60	37/62	G7/9	2009	Khabur	multiple burial	F?	adult														
61	37/62	G7/10	2009	Khabur	multiple burial	F??	adult										2				
62	37/62	G7/11	2009	Khabur	multiple burial	M	20–25								0	5/86	2				
63	37/62	G7/12	2009	Khabur	multiple burial	M	adult										3				
64	37/62	G7/13	2009	Khabur	multiple burial	M??	adult										3				
65	37/62	G7E/1	2009	Khabur	disturbed burial	F?	old adult	+	+	+	+	+	+	0				1	1		
66	37/62	G7E/2	2009	Khabur	small bone assemblage	—	0	+	+	+	+	+	+								
67	37/62	G8	2009	Khabur	small bone assemblage	—	0.75	+	+	+	+	+	+								
68	37/62	G9/1	2010	Khabur	small bone assemblage	—	2	+	+	+	+	+	+								

	Square	Locus	Season	Chronology	Context	Sex	Age	Skull	Teeth	Upper limb	Trunk	Pelvis	Lower Limb	Cribrra Orbitalia	Pototic Hyperostosis	Dental Caries	Enamel Hypoplasia	OA upper limb	OA lower limb	OA spine	Spondylosis
69	37/62	G9/2	2010	Khabur	small bone assemblage	?	adult			+	+										
70	37/62	G10	2010	Post-Akkadian	disturbed burial	—	0	+	+	+	+										
71	37/63	G1/1	2010	Khabur	a few bone fragments	?	adult	+	+	+	+	+			0	2/5	0				
72	37/63	G1/2	2010	Khabur	a few bone fragments	?	adult	+	+							2/2					
73	37/63	G1/3	2010	Khabur	a few bone fragments	F??	30–35	+	+	+						0/10	3	0	0		
74	37/63	G1/4	2010	Khabur	a few bone fragments	?	adult	+	+	+	+	+				0/18	1		0	0	0
75	38/60	G1	2008	Ninevite 5	a few bone fragments	F??	young ad.	+	+	+	+					0/15		0	0		
76	38/60	T3	2008		a few bone fragments	?	adult	+	+							0/1					
77	38/60	T3	2008		a few bone fragments	—	7–14	+													
78	38/61	G1/1	2008	Khabur	small bone assemblage	?	adult	+	+	+						0/8	2	2			
79	38/61	G1/2	2010	Khabur	single bone fragments	—	3–7	+		+											
80	38/61	G1/3	2008	Khabur	small bone assemblage	?	adult	+	+	+											
81	38/61	G2	2008	Khabur	disturbed burial	—	0.25	+	+	+	+	+									
82	38/61	G3	2008	Khabur	small bone assemblage	—	0.25	+	+	+	+										
83	38/61	G4	2009	Post-Akkadian	single burial	—	0	+	+	+	+										
84	38/61	G5/1	2009	Khabur	single burial	—	0	+		+	+	+									
85	38/61	G5/2	2009	Khabur	disturbed burial	—	0	+	+	+											
86	38/61	G5/3	2009	Khabur	small bone assemblage	—	0	+		+											
87	38/61	G6	2009	Khabur	single burial	F?	25–35	+	+	+	+	+				4/23	1	0	0	0	0
88	38/61	G7/1	2009	Post-Akkadian	disturbed burial	?	15	+	+	+	+	+				0/24	3				
89	38/61	G7/2	2010	Post-Akkadian	a few bone fragments	—	0	+		+											
90	38/61	G8	2009	Post-Akkadian	single burial	—	0	+	+	+	+	+									
91	38/61	G10	2010	Post-Akkadian	small bone assemblage	F?	18–21	+	+	+	+	+				1/26	2	0	0	0	0

	Spondylosis	OA spine	OA lower limb	OA upper limb	Enamel Hypoplasia	Dental Caries	Pototic Hyperostosis	Cribra Orbitalia	Lower Limb	Pelvis	Trunk	Upper limb	Teeth	Skull	Age	Sex	Context	Chronology	Season	Locus	Square
<b>92</b>							0	0	+		+		+	+	1	—	small bone assemblage	Post-Akkadian	2009	G11	38/61
<b>93</b>						0/12	0	1	+	+	+	+	+	+	2.5	—	single burial	Post-Akkadian	2009	G12	38/61
<b>94</b>							0	0	+	+	+	+	+	+	0.75	—	single burial	Post-Akkadian	2009	G13/1	38/61
<b>95</b>												+			7–14	—	a single bone fragment	Post-Akkadian	2009	G13/2	38/61
<b>96</b>									+		+	+	+	+	0	—	small bone assemblage	Khabur	2010	G14/1	38/61
<b>97</b>						0/7	1	1	+		+	+	+	+	3	—	disturbed burial	Khabur	2010	G14/2	38/61
<b>98</b>									+			+	+	+	0	—	small bone assemblage	Post-Akkadian	2010	G17	38/61
<b>99</b>											+		+	+	5–7	—	a few bone fragments	Khabur	2008	T18	38/61
<b>100</b>												+			adult	?	fragment of a humerus		2010	T21	38/62
<b>101</b>									+						adult	?	a few bone fragments		2008	T96	

There are two possible explanations of this peculiarity: (1) the Khabur Ware Period cemetery in Sector P was recognised as a burial place most suitable for the specified age class, (2) there was extremely high mortality of children in the post-weaning time, due to environmental stress such as infections or chronic undernutrition. A very high frequency of enamel hypoplasia supports the second explanation, but anyway such a high number of younger children is exceptional and difficult to explain only in ecological terms.

Differences in age patterns between the Post-Akkadian and Khabur Ware chronological subsets are statistically significant, for neonates versus other age categories  $p < 0.0005$  (Fisher's exact test).

In the Khabur Ware subset also sex bias has been observed, with 13 female and only 4 male skeletons recognised among adult individuals. The skeletons were usually badly preserved and only occasionally the sex diagnosis was based on observation of the most reliable criteria such as pubic morphology and greater sciatic notch shape. However, several metric measurements, showing significant dimorphic differences and calibrated for North Mesopotamian populations (SOŁTYSIAK 2010: table 23), could have been used instead. All male skeletons were found in the multiple burials, while female skeletons appeared both in multiple and single burials. In spite of the small sample size, this difference is also statistically significant,  $p < 0.03$  (Fisher's exact test).

There is also a difference between single and multiple burials in the frequency of dental caries. This condition is related to abundance of fermentable sugars in the diet and may be interpreted as proxy indicator of diet quality, with higher frequency of cariotic lesions in individuals who ate better food (HILLSON 1996). For adults from single burials dated to the Khabur Ware Period the frequency of cariotic teeth is 10.1%, for adults from the multiple burials 5.1% and for a small subset of four adults from Ninevite 5 and Post-Akkadian Period this is as low as 0.8% (see: **Table 2** for details). The sample size is small, but this difference is statistically significant ( $\chi^2 = 11.34$ ,  $p = 0.0035$ ,  $df = 2$ ) and it may be suggested that the diet of people buried in the single contexts in the Khabur Ware Period was more abundant in fermentable sugars than in the case of individuals buried in the multiple secondary deposits.

Stress markers were ambiguous in the sample from Sector P. Linear enamel hypoplasia in upper canines (for details see: **Table 2**) was common and only slight difference between single and multiple Khabur Ware Period burials could be observed, suggesting perhaps slightly lesser environmental stress impact on people buried in the single burials. On the other hand, cribra orbitalia and porotic hyperostosis were virtually absent and it may be concluded that megaloblastic anemia or scurvy (cf. WALKER ET AL. 2009) were not common among the people buried in Sector P at Tell Arbid. However, high incidence of enamel hypoplasia and perhaps high mortality in the post-weaning children may point to a very high level of environmental stress, at least in

the Khabur Ware Period. Also rocker mandible, another stress marker, was observed in three individuals, G6/38/61, G3/37/61, G6/35/60.

High incidence of stress markers at Tell Arbid is consistent with recently published data on environmental conditions in the MBA based on research carried out at Tell Mozan. According to these data, the period of aridity, previously dated to c. 2200–2100 BC (WEISS ET AL. 1993), should be extended to a period 1900–1800 BC (RIEHL ET AL. 2008; DECKERS 2010: 176–177; PFÄLZNER 2010: 7; RIEHL 2010: 65–69, tables 1, 7).

Observation of the degenerative joint disease was difficult due to strong erosion of epiphyses and vertebrae. It seems, however, that it was common in old individuals and virtually absent in young adults, as it could be expected. Much more interesting is the pattern of trauma with more instances of fractures, dislocations and trauma-related infections in the lower limb (see: **Table 3**). Also squatting facets on distal tibia were sometimes prominent, as in individuals from G7/38/61 and from G7/37/62. It seems then likely that people buried in Sector P were involved in such kind of physical activity which was related to high impact of mechanical stress on their legs.

The most interesting single individual in the whole studied sample of human remains was the old female buried in G4/37/59. She suffered from advanced osteoporosis, as indicated by very thin cortical bone. This condition made her more vulnerable for trauma and healed fracture of tibia as well compression fractures of several vertebral bodies may be related to advanced antemortem bone demineralisation. Only small fragments of alveoli were present, and all teeth from these regions were lost antemortem. Degenerative joint disease was observed in most preserved joints, most advanced in distal radius, distal femur and left condylar process of the mandible. Also spondylosis in lower thoracic vertebrae was common, but absent in a few remaining fragments of lumbar and cervical spine. Articular surface on left scapular acromion was dislocated and also some markers of occupational stress were present, as hypertrophy of humeral supracondylar ridge, very clear margins on palmar side of proximal and middle finger segments, and extended articular surface on dorsal side of the first metatarsal.

Three of these features (dorsal extension of articular surface in first metatarsal, degenerative joint disease in lower thoracic vertebrae and in femoral condyli) were also present in the sample of human remains at Tell Abu Hureyra and interpreted as signs of habitual grinding on a saddle quern (MOLLESON 1994; 2007). Also some modifications in the upper limb (margins in finger segments, dislocation of acromial articular surface and osteoarthritis in the wrist, see: **Fig. 10**) may be consistent with such an interpretation, but it must be kept in mind that such kind of individual diagnosis is always risky and based rather on general idea how muscles and joints work than on any actualistic or clinical evidence of a given kind of activity and its implications.

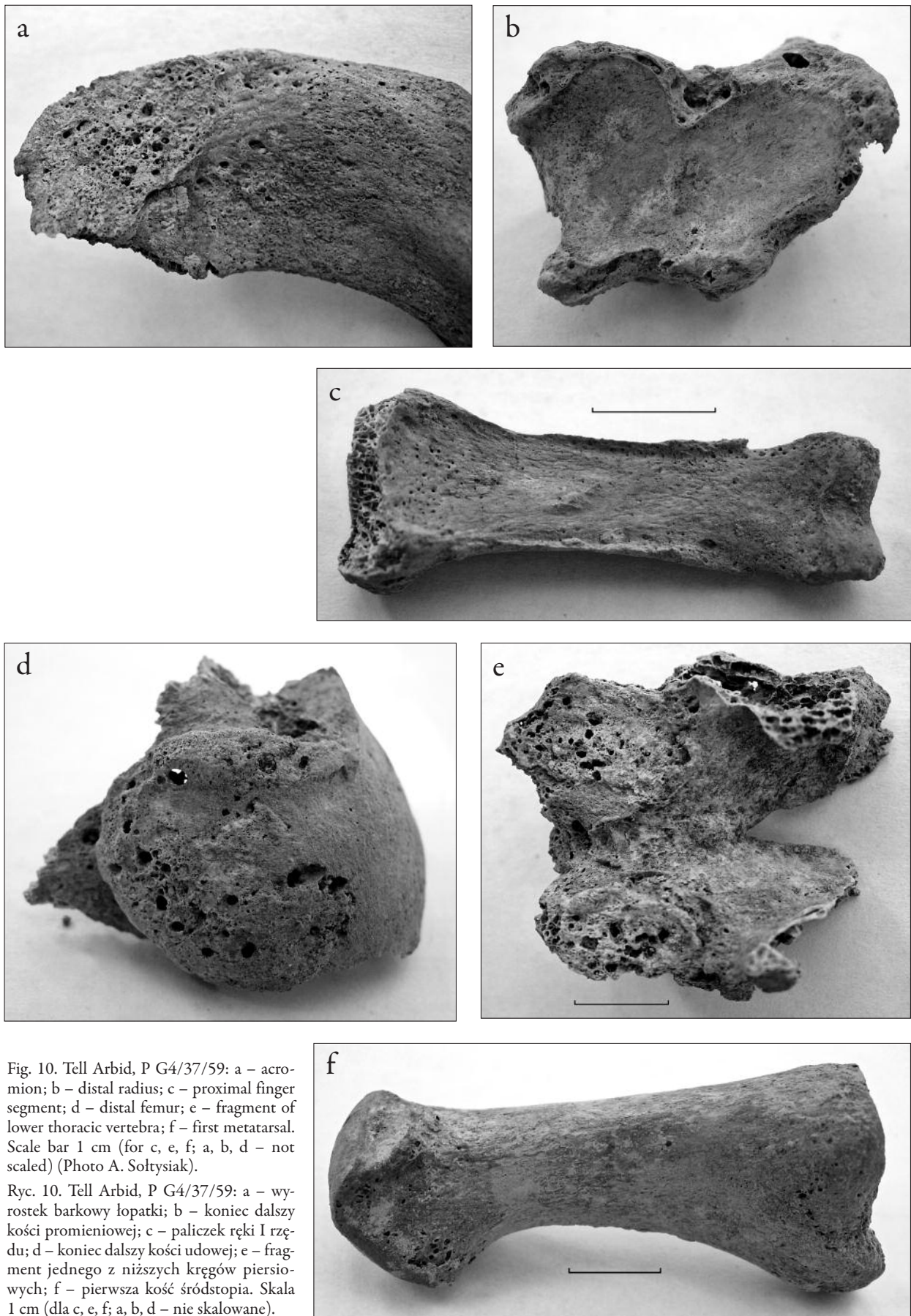


Fig. 10. Tell Arbid, P G4/37/59: a – acromion; b – distal radius; c – proximal finger segment; d – distal femur; e – fragment of lower thoracic vertebra; f – first metatarsal. Scale bar 1 cm (for c, e, f; a, b, d – not scaled) (Photo A. Soltysiak).

Ryc. 10. Tell Arbid, P G4/37/59: a – wyrostek barkowy łopatki; b – koniec dalszy kości promieniowej; c – palec ręki I rzędu; d – koniec dalszy kości udowej; e – fragment jednego z niższych kręgów piersiowych; f – pierwsza kość śródstopia. Skala 1 cm (dla c, e, f; a, b, d – nie skalowane).

## Conclusion

In general, the sample of human remains from Sector P at Tell Arbid is numerous enough to draw some preliminary conclusions. Both the Post-Akkadian and Khabur Ware cemeteries or clusters of burials were dedicated to the dead of specified age and/or sex, and also some differences between individuals buried in single and multiple graves were observed, perhaps related to differences in subsistence. A very high frequency of linear enamel hypoplasia and also high number of dead post-weaning young children point to a high level of environmental stress in the Khabur Ware Period. This observation must be,

however, checked with a larger sample of earlier and later individuals from the region.

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Table 3. Pattern of trauma in the assemblage of human remains in Sector P at Tell Arbid.

Tabela 3. Urazy w zbiorze szczątków ludzkich z Sektora P na Tell Arbid.

Individual	Sex	Age	Condition	Location
G6/35/60	F	40–50	congenital asymmetry	right humerus
			healed fracture	ulnar styloid process
			enthesophytosis	pubic symphysis
G4/36/62	?	adult	healed fracture (?)	midshaft of femur
G1/37/59	?	adult	periostitis	anterior midshaft of femur
			healed fracture (?)	humerus
G4/37/59	F??	old adult	healed fracture	midshaft of tibia
			dislocation of articular surface	scapular acromion
G4/37/60	F?	35–40	healed fracture, dislocation	proximal toe segment
G3/37/61	F	20–25	dislocation of articular surface	right talus
G7/37/62	?	adult	healed osteomyelitis	fibula
			fracture, initial healing	patella
G7E/37/62	F?	old adult	healed fracture	proximal toe segment
G6/38/61	F?	25–35	dislocation of articular surface	both navicular bones
			osteomyelitis	tibia and fibula



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SZCZĄTKI LUDZKIE Z TELL ARBID – SEKTOR P,  
SEZONY 2008–2010 – RAPORT WSTĘPNY

W latach 2008–2010 misja archeologiczna Instytutu Prahistorii Uniwersytetu Adama Mickiewicza w Poznaniu, kierowana przez Rafała Kolińskiego, prowadziła wykopaliska na wschodnim stoku stanowiska Tell Arbid w północno-wschodniej Syrii. Podczas tych prac odkryto 30 grobów datowanych na okres ceramiki chaburskiej (ok. 2000–1500 p.n.e.), 17 datowanych na okres post-akadyjski (ok. 2150–2000 p.n.e.) i jeden datowany na okres Niniwa 5 (ok. 2750–2550 p.n.e.). Zarówno w grobach, jak i w licznych innych obiektach, znaleziono szczątki ludzkie, należące do co najmniej 92 osobników, w tym 73 datowane na okres ceramiki chaburskiej, 18 datowanych na okres post-akadyjski oraz jeden z okresu Niniwa 5.

Proporcje poszczególnych kategorii wiekowych w okresie post-akadyjskim i ceramiki chaburskiej różnią się od naturalnego profilu umieralności; również proporcje płci są zaburzone. W okresie post-akadyjskim najliczniejsze były pochówki noworodków i niemowląt, w okresie ceramiki chaburskiej znacznie wyższa od oczekiwanej była liczba dzieci w wieku od roku do pięciu lat. Również w okresie ceramiki chaburskiej na 17 szkieletów osób dorosłych o rozpoznanej płci aż 13 należało do kobiet; ponadto szkielety

mężczyzn były znajdowane wyłącznie w pochówkach zbiorowych. Wszystkie te różnice świadczą o niereprezentatywności badanego zbioru szkieletów i są zapewne spowodowane specyfiką zwyczajów pogrzebowych.

W okresie ceramiki chaburskiej próchnica była relatywnie częsta, przy czym widać wyraźną różnicę między pochówkami zbiorowymi (5,1%) i pojedynczymi (10,1%). W okresie post-akadyjskim jedynie 0,8% zębów wykazuje ubytki próchnicze, ale próba składa się tylko z czterech osobników. W okresie ceramiki chaburskiej liniowa hipoplazja szkliwa była powszechna, natomiast niemal zupełnie nie występowały symptomy anemii megaloblastycznej: cribra orbitalia i gąbczaty przerost kości. Zgodnie z oczekiwaniami, choroba zwyrodnieniowa stawów była obserwowana tylko u osobników w bardziej zaawansowanym wieku, zwłaszcza u kobiety z grobu G4/37/59, u której można było zaobserwować również zaawansowaną osteoporozę, połączoną z zaleczonym złamaniem piszczeli i kompresyjnymi złamaniami wielu trzonów kręgow, oraz dyslokację powierzchni stawowej na wyrostku barkowym lewej łopatki.