ANTHROPOLOGICAL OBSERVATIONS FROM TELL EL-RETABA

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Abstract: *Skeletons of 29 individuals were examined from the SIP tombs excavated from 2010 to 2015. The majority (58.6%) of individuals were adults and 41.4% were juveniles. Seven men (24.1%) and five women (17.2%) were included in the group of adults. There is a slight predominance of younger individuals in the group of male skeletons, while the proportion of older women is higher among female skeletons. About 75% of children died at the age of up to four years. Anthropometric data have been obtained only from five adults; two individuals had their skull dimensions measured. The skeletons were of taller stature and had Europoid, narrow, high and long heads with high foreheads, narrower faces with high orbits and small noses. Deviation and pathological skeletal changes skeletal changes allowed to draw conclusions on the population's way of life.*

Keywords: *Second Intermediate Period cemetery, skeletons, morphometrics, paleopathology, northern Egypt*

The Slovak-Polish team discovered eight SIP tombs in Areas 7 and 9 in the years 2011–2014. In these tombs skeletal remains of seven individuals were closely identified.[1] Another tomb, with skeletal remains of three individuals, was discovered in Area 4 during the 2015 season (see above). From a total of eleven individuals ten individuals have been analysed in detail. Skeletons were anthropologically examined immediately after exhumation, showing a large extent of damages; some skeletons were impaired to fragments.

1. Morphometric specifications

Among the eleven individuals (Tabs. 1, 2), seven skeletal remains of adults were identified (four males, two females and one undetermined), one skeleton belongs to a juvenile and three skeletons to children. Almost half (45.5 %) of the skeletons belong to men. Two men died at the age 20–29, one was aged 55–65 and the age of one was unable to be estimated. One female was older (50–59 years) and the age of another could not be further assessed. About one-third (27.3 %) of the skeletons belonged to young children. From the children skeletons one belongs to a new-born and two skeletons to children aged about four years.

Table 1 Summary of skeletons from the Second Intermediate Period, deviations and pathological changes. A. – Area, M. – Measurements, + anthropologically unevaluated, * (Rzepka *et al.* 2014), ** (Rzepka *et al.* 2015), 1. *Sutura metopica interorb*., 2. *Cribra orbitalia*, 3. Perforation of bones (by insects or other animals?), 4. Schmorl´s nodes, 5. *Spondylosis deformans*, 6. *Spondylarthrosis*, 7. Osteomas, 8. 8. Facets on the femoral neck, 9. Arthrosis of bones, 10. Fractures, 11. Notch on patella.

Year	A.	Skeleton	Tomb	Sex	Age	Age2	Category	M.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
2011	9	812*	810	male?	20–29	adult	adultus I	x		x	x	x		x					x
2011	9	830*+	810	adult	adult	adult	adult												
2012	7	922*	922	child	2–4	child	infans I												
2012	7	927*	920	female	50–59	adult	maturus II	x	x			x	x			x	x		x
2012	7	947*	929	male	50<	adult	mat2/sen	x	x			x	x	x	x		x	x	x
2014	7	1425**	942	male	20–25	adult	adultus I					x							x
2014	7	1432**	1431	child	0–0,3	child	circum.												
2014	7	1446**	1428	female?	adult	adult	adult												
2015	4	1757/1	1696	male	adult	adult	adult					x		x					
2015	4	1757/2	1696	child	3–5	child	infans I												
2015	4	1757/3	1696	male?	12–18	juv	juvenis				x								

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[1] Rzepka *et al*. 2014; 2015.

Table 2 Distribution of individuals from the Second Intermediate Period. M – males, F – females, ND – juveniles, N – sex unidentified, D – adults, circum. – circumnatale, inf. – infans, juv. – juvenis, ad. – adultus, mat. – maturus, sen. – senilis.

Age	circum.	inf. I	inf. I/II	inf. II		juv.	ad. I	ad./mat.	mat. II	mat.	mat./sen.			
Sex	**0–0,5**	**0,6–4**	**5–9**	**10–14**	**inf.**	**15–19**	**20–29**	**30–49**	**50–59**	**40–59**	**55–65**	**D**	**Total**	**%**
M						1	2				1	1	5	45,5
F									1			1	2	18,2
ND	1	2											3	27,3
N												1	1	9,1
Total	**1**	**2**	**0**	**0**	**0**	**1**	**2**	**0**	**1**	**0**	**1**	**3**	**11**	**100,0**

The skeletal remains were too damaged, therefore only two individuals have gotten more complete metric characteristics. Coincidentally, the majority of the data is available from the older woman 927[2] and less of an elderly man 947.[3] The more preserved skull of the women is, according to the measurements, long, very narrow, high, with medium horizontal circumference, a small transverse arch, a very large frontal and parietal arc, with medium capacity, a very low upper face, a very small width, a very large height of orbits and a very small height of the nose. According to the indexes, the skull of the women is hyperdolichocran (very long), with a very small index of *foramen magnum* and with high eye sockets. The skull of the man is very long, narrow, with a very large horizontal circumference and a high frontal and parietal arc. It is dolichocranic, according to the indexes. The skulls of both individuals can thus be characterised as long and narrow, with very little skulls modules (basically the mean of the maximum length, maximum width and height of the skull), in accordance with measurements, indexes and craniological categories.[4]

Pursuant to the most preserved postcranial skeletons, the younger man (?) 812[5] has a moderately robust and platybrachic *humerus*, a robust *radius*, a platymer *femur* with medium pilaster, an eurycnem *tibia* and a mesokeric forearm. He was about 167 cm (above average) high. The elderly man 947 has a moderately robust and eurybrachic *humerus* and a platycnem *tibia*. He was 172 cm high. The elderly woman 927 has a hyperplatymer *femur* with an uncreated pilaster.

2. Deviation and pathological changes

Deviation and pathological changes are characteristic mainly for adults (Tab. 1). In one of the adult males (?) *cribra orbitalia* is located on both sides (Fig. 1). By almost all adults degenerative changes can be seen in the spine, particularly Schmorl's nodes on vertebral bodies. In two cases, they are also accompanied by *spondylosis deformans* (arthritic growths on the edges of the vertebrae) and by one individual in addition with arthritic changes on the tips of the vertebrae.

At the two oldest individuals arthritic changes on the limb bones were found as well, and at one older man osteoma (smaller benign tumours) or enlarged parts of *massae laterales* on the first cer-

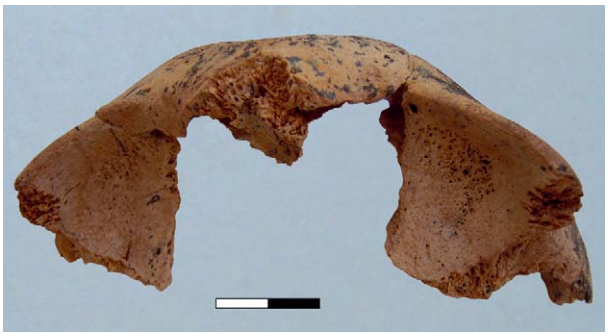

Fig. 1 Individual 812, male, adultus I (20 – 29 years), *cribra orbitalia* on eyesockets (Photo A. Šefčáková)

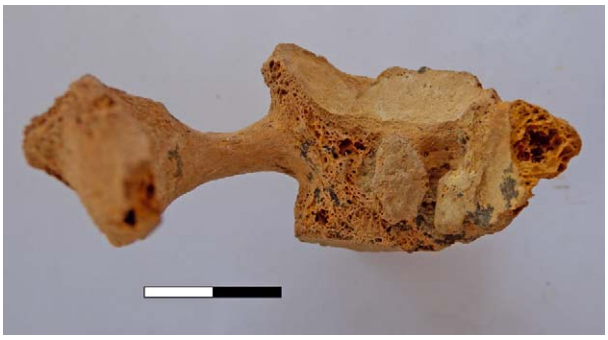

Fig. 2 Individual 947, man, maturus II/ senilis (50 + years), osteoma – enlarged part of *massae laterales*? Inside by the left *fovea articularis superior* of *atlas* (Photo A. Šefčáková)

[2] Rzepka *et al*. 201, 47–50.

[3] Rzepka *et al*. 2014, 47–48, 50–52.

[4] According to Alekseev and Debec (1964), based on the analysis of 88 ethnic groups from around the world.

[5] Rzepka *et al*. 2014, 46–48.

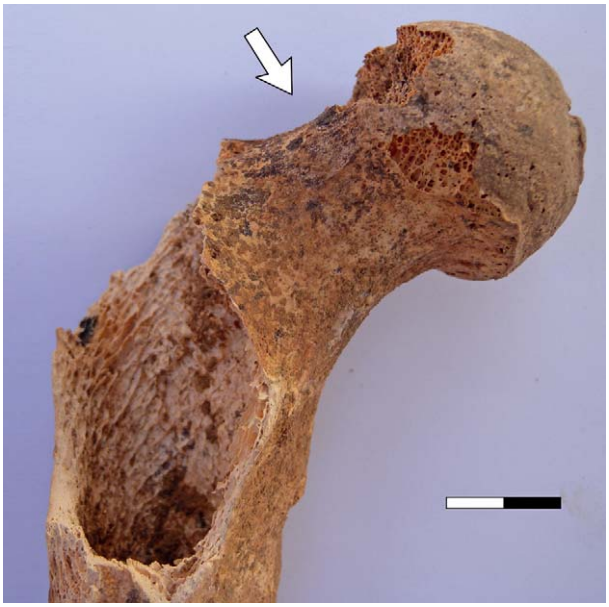

Fig. 3 Individual 927, female, maturus II (50 – 59 years), the plate on backside of *collum femoris sin.* (Photo A. Šefčáková)

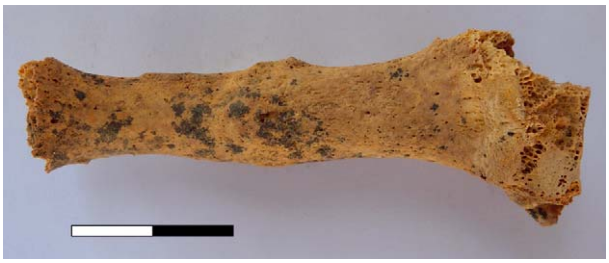

Fig. 4 Individual 947, man, maturus II/ senilis (50 + years), healed fracture on the second left metatarsal bone (Photo A. Šefčáková)

vical vertebrae (Fig. 2). One woman has an epigenetic character at the femoral neck, in the form of specific facets (caused by kneeling, crouching or horseback riding?) (Fig. 3). One older man has a healed fracture of the metatarsal bone (Fig. 4). Four adults have notches *incisura vastus lateralis* (epigenetic character?) on the lateral side of the kneecap (Fig. 5).

3. Skeletal remains from the Egyptian rescue excavation

In 2010 and 2011 seventeen SIP tombs were discovered and excavated by an Egyptian rescue team led by Mustafa Nour El-Din.[6] Skeletal remains of 18 individuals were identified (Tabs. 3, 4). Of these, nine (50 %) were adults (two males, three females, and four unidentified) and nine (50 %)

Fig. 5 Individual 812, male, adultus I (20 – 29 years), notches (*incisura vastus lateralis*) on the lateral edge of patellas (Photo A. Šefčáková)

were children (Tab. 4). Anthropological examinations could be completed on the remains of ten individuals; in three cases, only a basic estimation was able to be done.

Half (i.e. nine, 50 %) of the skeletons belonged to juveniles, of which over 2/3 (six individuals) were children under the age of four. One child was older, one was about 13 years old and the age of one child was not able to be identified. In the group of men, one individual died at the age of 30 to 49 and one died at the age of 40 to 59. Two women are believed to be older and the age of one woman was not able to be estimated (Tabs. 3, 4).

Cribra orbitalia is visible on the orbits' apex of one child. There are spine degenerative changes in three adults (Schmorl's nodes, *spondylosis deformans, spondyl-arthritis*), benign tumours (*osteoma*) were found at two older individuals (610 and 680). Moreover, there were flat surfaces on the heads of both femurs at these two individuals. The male skeleton 610[7] had periodontitis and the skeleton of the older woman 680[8] had significant pathological tissue remodelling visible in the frontal section of both jaws (Fig. 6a, b). There were arthritic changes on three long bones of the same female.

4. Conclusions

Anthropological examinations of 29 SIP individuals (Tab. 5) have been completed up to now. Five individuals could be designated as "other unidentified adults". The majority (17 or 58.6 %) of 29 individuals were adults and 12 (41.4 %) were juvenile individuals.

Seven men (24.1 %) and five women (17.2 %) were included in the group of adults. Five individ-

6 Nour El-Din *et al.* 2016.

7 Nour el-Din *et al.*2016, 88–90.

8 Nour el-Din *et al.*2016, 91–93.

uals (17.2%) were designated as inconclusive. There is a slight predominance of younger individuals in the group of male skeletons, while among the female skeletons there is a higher proportion of older women. The majority of the children (nine individuals, i.e. 75%) died at the age of up to four years.

The hyperostosis on the eyesockets (*cribra orbitalia*) and hypoplasia on the teeth enamel belong to signs of poor nutrition (i.e. nutritional

Table 3 Summary of skeletons from the Second Intermediate Period (Nour el-Din et al. 2016), deviations and pathological changes. A. – Area, M. – Measurements, * anthropologically unevaluated, 1. *Sutura metopica interorb*., 2. *Cribra orbitalia*, 3. Perforation of bones (by insects or other animals?), 4. Schmorl´s nodes, 5. *Spondylosis deformans*, 6. *Spondylarthrosis*, 7. Osteomas, 8. Facets on the femoral neck, 9. Pathology of mandible, 10. Paradontosis, 11. Arthrosis of bones.

Year	A.	Skeleton	Tomb	Sex	Age	Age2	Category	M.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
2011	9	677	1	child	1-2	child	infans I												
2011	9	673	2	female?	adult	adult	adult				x	x							
2011	9	674*	3	child	child	child	child												
2011	9	672/1*	4	adult	adult	adult	adult												
2011	9	672/2*	4	adult	adult	adult	adult												
2011	9	675*	5	adult	adult	adult	adult												
2011	9	676*	6	adult	adult	adult	adult												
2011	9	612	7	child	0,5-1	child	infans I												
2011	9	610	8	male	45-55	adult	A2/M1	x					x		x	x		x	
2011	9	613	9	child	0-0,4	child	circum.												
2011	9	680	10	female	50-59	adult	maturus II	x				x	x	x	x	x	x		x
2011	9	681*	11	?	?	?	?												
2011	9	653	12	child	0,5-1	child	infans I												
2011	9	654	13	child	5-6	child	infans I		x										
2011	9	655	14	child	1-2	child	infans I												
2011	9	656	15	child	5-9	child	infans I/II			x									
2011	9		16a	male	40-59	adult	maturus												
2011	9		16b	female	40-59	adult	maturus												
2011	9		17(16c)	child	13	child	infans II												

Table 4 Distribution of individuals from the Second Intermediate Period, Egyptian Rescue Mission. M – males, F – females, ND – juveniles, N – sex unidentified, D – adults, circum. – circumnatale, inf. – infans, juv. – juvenis, ad. – adultus, mat. – maturus, sen. – senilis.

Age	circum.	inf. I	inf. I/II	inf. II		juv.	ad. I	ad./mat.	mat. II	mat.	mat./sen.			
Sex	**0–0,5**	**0,6–4**	**5–9**	**10–14**	**inf.**	**15–19**	**20–29**	**30–49**	**50–59**	**40–59**	**55–65**	**D**	**Total**	**%**
M								1		1			2	11,1
F									1	1		1	3	16,7
ND	1	5	1	1	1								9	50,0
N												4	4	22,2
Total	**1**	**5**	**1**	**1**	**1**	**0**	**0**	**1**	**1**	**2**	**1**	**5**	**18**	**100,0**

Table 5 Total distribution of individuals from the Second Intermediate Period. M – males, F – females, ND – juveniles, N – sex unidentified, D – adults, circum. – circumnatale, inf. – infans, juv. – juvenis, ad. – adultus, mat. – maturus, sen. – senilis.

Age	circum.	inf. I	inf. I/II	inf. II		juv.	ad. I	ad./mat.	mat. II	mat.	mat./sen.			
Sex	**0–0,5**	**0,6–4**	**5–9**	**10–14**	**inf.**	**15–19**	**20–29**	**30–49**	**50–59**	**40–59**	**55–65**	**D**	**Total**	**%**
M						1	2	1		1	1	1	7	24,1
F									2	1		2	5	17,2
ND	2	7	1	1	1								12	41,4
N												5	5	17,2
Total	**2**	**7**	**1**	**1**	**1**	**1**	**2**	**1**	**2**	**2**	**1**	**8**	**29**	**100,0**

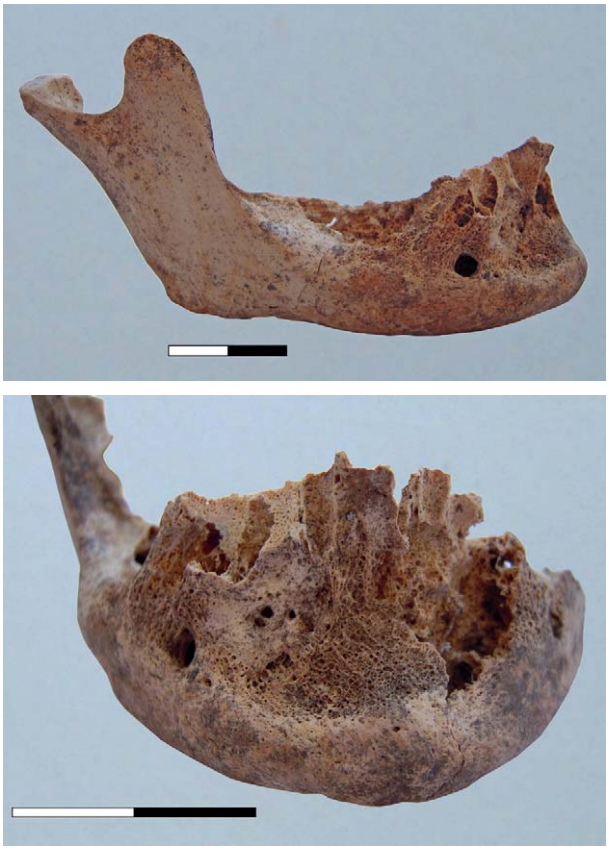

Fig. 6a, b Individual 680, female, maturus II (50 – 59 years), the significant pathological tissue remodelling in the frontal section of *mandibula* (Photo A. Šefčáková)

stress). The *cribra orbitalia* signs were discovered in only two cases, at child 656[9] and the younger man 812[10] in Tell el-Retaba.

Degenerative spine diseases – Schmorl's nodes (Figs. 7 and 8), *spondylosis deformans, spondylarthritis* – are signs of higher age and also a result of heavy physical work. These were found at eight adults (five males and three females), which make up for 2/3 of the number of designated individuals. Two younger men were among those affected, even though such signs would not be expected at their age.

Small benign tumours (osteoma) or enlarged parts of *massae laterales* were found in two elderly men and one woman. An interesting feature is a strong pathological tissue remodelling, which could have been caused by bacterial infection, was discovered on the jaw of the older female 680 in grave 10. Arthritic changes on the long bones were visible at one male and two females. A fracture was discovered only in the case of an elderly man (healed fracture of a metatarsal bone).

An epigenetic marker was found on the neck (collum femoris) of both femurs of one man and two women. These are specific flat areas (caused by kneeling, squatting or possibly by horse riding). A notch *incisura vastus lateralis* (Figs. 9 and 10) is visible on the outside part of the kneecaps in four adults, which can be a sign of an additional epigenetic marker (kneeling or possibly squatting).

In order to get an accurate idea of the SIP people, it is desirable to compare results of the anthropological analysis performed on larger SIP cemeteries, which could be generalised to a certain extent. The best-known SIP burial site so far was explored in the area of Tell el-Dabᶜa – Avaris[11] in the eastern Nile Delta. The Avaris populations were called Canaanites of the Middle East and classified as a Syrian-Palestinian culture of the Middle Bronze Age II.[12] Anthropological examinations of 257 skeletons originating from Tell A were published. Of those, the majority (42.4 %) died in the adultus age (20–40 years) and in infans I (31.1 %); almost half of the infants were newborns. Women significantly outnumbered men in the population for unknown reasons, even though polygamy has not been proven. Differences in sex with regards to robustness should be described as remarkably great; possibly specific selection conditions and/or founder effects concerning both sexes were involved.[13] This would mean that the majority of the female partners were taken from somewhere else in the Near East and not from the place of origin of the males. As they also show strong affinities with the Near East, maybe the majority of the Canaanites who immigrated during the late 12th and 13th Dynasties to Tell el-Dabᶜa took their female partners from the local population originating from previous immigration wave(s).[14]

Females (n = 71, i.e. 27.6 %) had a significantly lower life expectancy (about 30 years) than males (n = 49, i.e. 19.1 %,), who had a life expectancy of 34.4 years. Average skulls were mesocranic, medium high, with a low to medium and wider face, moderate to high orbits and a medium-sized nose. Femurs of women are platymeric and eurycnemic,

9 Nour el-Din *et al.*2016, 97–98.

10 Rzepka *et al.* 2014, 39–43, 46–48.

11 Jungwirth and Engelmayer 1968; Winkler and Wilfing 1991.

12 Jungwirth and Engelmayer 1968; Jungwirth 1969; 1970; Winkler and Wilfing 1991.

13 Winkler and Wilfing 1991.

14 Bietak 2016.

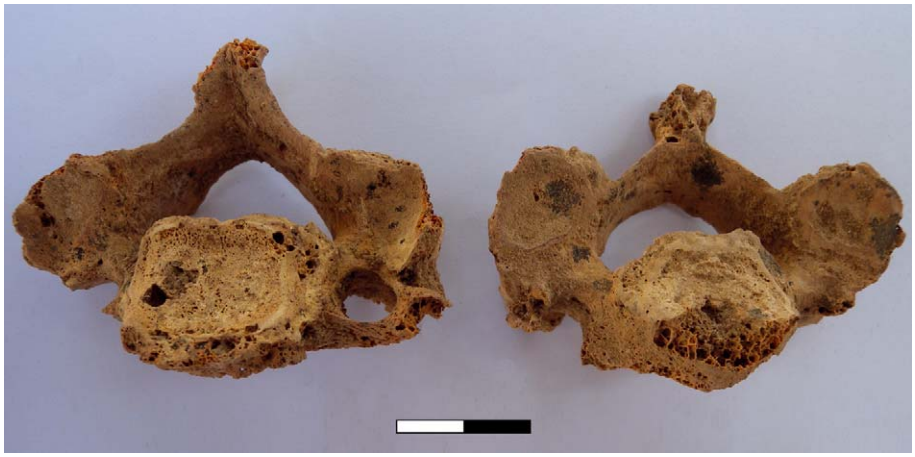

Fig. 7 Individual 947, man, maturus II/ senilis (50 + years), Schmorl´s nodes on cervical vertebrae bodies (Photo A. Šefčáková)

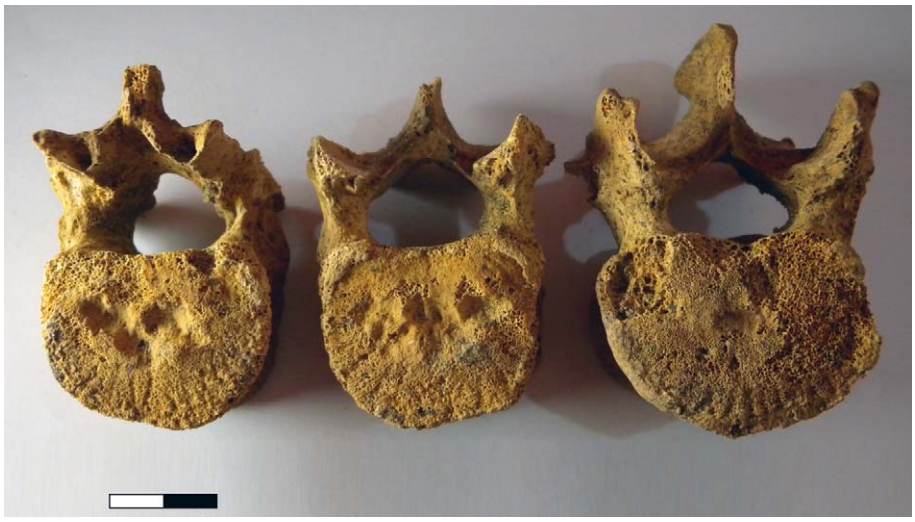

Fig. 8 Individual 1425, man, adultus I (20 – 25 years), Schmorl´s nodes on lumbal vertebrae bodies, i.e. traces of premature degenerative vertebral column defect (Photo A. Šefčáková)

Fig. 9 Individual 947, man, maturus II/ senilis (50+ years), notch (*incisura vastus lateralis*) on the lateral edge of the left patella (Photo A. Šefčáková)

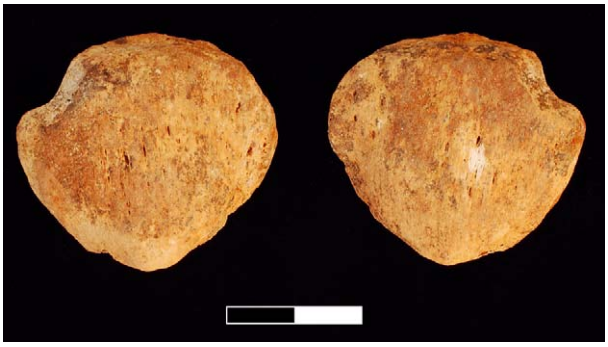

Fig. 10 Individual 1425, man, adultus I (20 – 25 years), *patellae* with the notch (*incisura vastus lateralis)* located on the exterior edge (Photo F. Engel)

Femurs of men platycnemic and mesocnemic. The majority of the men and women were of tall stature.

Based on the frequent occurrence of the so-called "stress" indicators (enamel hypoplasia, porotic hyperostosis, thickening *tubera frontalia* and *parietalia*), the people of Avaris had to suffer from a high degree of vitamin deficiency, malnutrition diseases and anaemia caused by a recurrent lack of food. They also suffered from parasites and infectious diseases. Apparently, the situation was related to the problems of immigrants who came from the moderately dry climate and had to adapt to different environmental conditions – humidity,

heat and the swampy environment of the Eastern Delta. In addition to political, military and economic issues, the environmental conditions could have had an important impact on the migration of foreign populations to Avaris.[15]

According to the statistical multivariate analyses, based mainly on odontometric data, the data of the Tell el-Dabᶜa population were very different from the Ancient Egyptian data. The features of the Tell el-Dabᶜa population were closely related to those of the populations in the Near East and the Phoenician area in northern Africa.

The set of data from Tell el-Retaba is so far not extensive enough to make conclusions analogical to Tell el-Dabᶜa. Anthropometric data (rather incomplete) has been obtained from only five adult skeletons; of those only two individuals could be measured for skull dimensions. Therefore, the acquired results cannot be generalised for the whole population. Skeletal remains allow, however, some conclusions on the way of life to be drawn from their appearance. It is at least possible to assume that the skeletons were of taller stature and they had Europoid, narrow, high and long heads with high foreheads, narrower faces with high orbits and small noses. As only a relatively low number of the SIP individuals could so far be examined in Tell el-Retaba, data and information are rather scarce. Therefore, it is not possible to provide an identification of their geographical origin.

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[15] Winkler and Wilfing 1991.