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ANALYSIS OF SKELETAL MATERIAL FROM THE KOM EL-DIKKA SITE, 2004/2005 SEASON

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During the 2004/2005 season, part of the skeletal material excavated from the Islamic cemeteries on Kom el-Dikka in Alexandria in 2002-2004 was subjected to anthropological analysis.[1] Of the 32 grave units that were studied, 29 belonged to the so-called Upper Necropolis (11th-12th century), one to the Middle Necropolis (9th-10th century) and one to the Lower Necropolis (7th-8th century).[2] One further grave was tentatively attributed to the Upper Necropolis. The analyzed series consisted mainly of badly fragmented and eroded remains. Much of the material was mixed owing to the collective character of the burials that were excavated.

The minimal number of individuals identified in the skeletal material from the grave units was determined at 83. Of these, 32 were men,[3] 34 women and 13 children. The last group included, apart from *Infans* I and *Infans* II skeletons, individuals of *Iuvenis* age, whose gender could not be determined. In the case of the remaining four individuals, gender was indeterminable owing to insufficient data.[4] The percentage share of each of these groups compared to the entire examined series along with gender distribution across the three cemeteries has been presented in *Table 1*. Virtually the same information, excluding marginally represented Lower and Middle Necropolises,

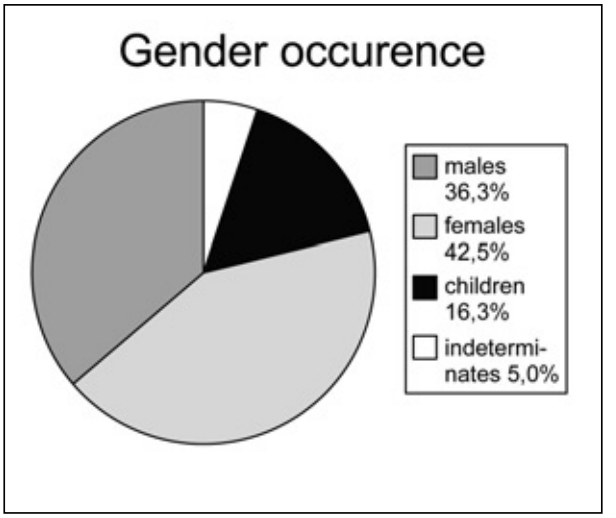


Chart 1. Gender occurrence in examined individuals from the Upper Necropolis (2004/2005 season)

1 For the excavations, see reports by G. Majcherek in previous volumes of *PAM* for the relevant years.

2 For a comprehensive archeological description of particular phases of the cemeteries, their dating and stratigraphy, cf. L. Dąbrowski, "Two Arab Necropoles Discovered at Kom el-Dikka (Alexandria)", *EtTrav* I (1966), 171-180.

3 Gender determination based on a broad range of methods as described in J. Piontek, Biologia Populacji Pradziejowych (Poznań 1996).

4 Either the skeletal material was in poor condition or else the secondary gender characteristics were not sufficiently well articulated on the bones.

	♂♂		♀♀		Ch		?		Σ	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Upper N.	29	(36.3)	34	(42.5)	13	(16.3)	4	(5.0)	80	(100.0)
Middle N.	1	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	1	(100.0)
Lower N.	2	(100.0)	0	(0.0)	0	(0.0)	0	(0.0)	2	(100.0)
sum	32	(38.6)	34	(41.0)	13	(15.7)	4	(4.8)	83	(100.0)

Ch - children, ? - indeterminate, Σ - sum, n - sample size

Table 1. Gender occurrence in examined individuals broken down by cemetery phases

has been presented in somewhat more graphical manner in *Chart 1*.

Gender distribution in the analyzed assemblage, considering the Upper Necropolis exclusively, constituted 46.03% male skeletons and 53.97% female ones.

In many cases, the unsatisfactory condition of the skeletal material, its considerable fragmentation and the fact that in most cases bones of more than one individual were mixed, excluded detailed anthropological examination. The essential data necessary to estimate body height at death were collected for five men and 11 women. Stature was determined with Pearson's regression equations,[5] which appear sufficient for the purposes of tentative comparisons.[6] Result statistics are presented in *Table 2*. All of the individuals whose height could be estimated had been buried in graves attributed by archaeologists to the Upper Necropolis.

The age structure of the examined individuals was analyzed by attributing their age at death to one of six groups determining the ontogenetic rhythm of human life. The results of the analysis were put together in *Table 3* and presented in *Chart 2*. Burials from the Lower and Middle Necropolises were excluded from the analysis in view of their marginal share in the total number of examined skeletons. Frequencies

	n	$\bar{x}$	range	s
♂♂	5	163.6	157-173	7.73
♀♀	11	156.2	151-165	4.00

n - sample size, $\bar{x}$ - arithmetical mean, s - standard deviation

Table 2. Statistics of the stature of examined individuals from the Upper Necropolis (2004/2005 season)

5 Measurements taken in accordance with the widely applied methods of R. Martin, K. Saller, Lehrbuch der Anthropologie (Stuttgart 1957-1959) were analyzed with methods suggested by K. Pearson, "On the reconstruction of stature of prehistoric races. Mathematic contribution to the theory of evolution", *Transactions of the Royal Society* 192 (1899), 169-244. This was done in view of the absence of reliable data on the morphotype attribution of particular individuals. In further analyses, it would be constructive to set up such a division and to apply regression equations developed by M. Trotter, G.C. Gleser, "Estimation of stature from long bones of American Whites and Negroes", *American Journal of Physical Anthropology* 10 (1952), 463-514.

6 Various methods of estimating body height at death are compared in J. Strzałko, "Metody rekonstrukcji wzrostu człowieka na podstawie pomiarów szkieletu", *Przegląd Antropologiczny* 37, fasc. 2 (Poznań 1971), 295-314.

		Infans I (0-7 yrs)	Infans II (7-14 yrs)	Iuvenis (14-20 yrs)				Adultus (20-35 yrs)				
				♂♂	♀♀	?	Σ	♂♂	♀♀	?	Σ	
Upper N.	n	9.00	2.00	0.50	2.00	0.50	3.00	16.50	16.83	0.83	34.16	
	(%)	(11.3)	(2.5)	(0.6)	(2.5)	(0.6)	(3.7)	(20.6)	(21.0)	(1.0)	(42.6)	

		Maturus (35-55 yrs)				Senilis (55-x yrs)				indeterminate				sum
		♂♂	♀♀	?	Σ	♂♂	♀♀	?	Σ	♂♂	♀♀	?	Σ	
Upper N.	n	7.50	8.83	0.33	16.66	1.50	3.33	0.33	5.16	3.00	3.00	4.00	10.00	79.98
	(%)	(9.4)	(11.0)	(0.4)	(20.8)	(1.9)	(4.2)	(0.4)	(6.5)	(3.8)	(3.8)	(5.0)	(12.6)	(100.0)

? - indeterminate, Σ - sum

Table 3. Age at death of examined individuals from the Upper Necropolis (2004/2005 season)

		H				S				J				A				C	PC	skeletons examined
		d.1	d.2	d.3	Σ	d.1	d.2	d.3	Σ	d.1	d.2	d.3	Σ	d.1	d.2	d.3	Σ			
♂♂	n	3	4	0	7	3	1	6	10	3	1	3	7	4	3	2	9	3	19	26
	(%)	(11.5)	(15.4)	(0.0)	(26.9)	(11.5)	(3.8)	(23.1)	(38.4)	(11.5)	(3.8)	(11.5)	(26.8)	(15.4)	(11.5)	(7.7)	(34.6)	(11.5)	(73.1)	(100.0)
♀♀	n	3	1	0	4	2	1	2	5	2	0	2	4	3	1	1	5	5	12	24
	(%)	(12.5)	(4.2)	(0.0)	(16.7)	(8.3)	(4.2)	(8.3)	(20.8)	(8.3)	(0.0)	(8.3)	(16.6)	(12.5)	(4.2)	(4.2)	(20.9)	(20.8)	(50.0)	(100.0)
?	n	0	0	0	0	0	0	1	1	0	0	0	0	0	2	2	4	0	6	15
	(%)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(6.7)	(6.7)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(13.3)	(13.3)	(26.6)	(0.0)	(40.0)	(100.0)
Σ	n	6	5	0	11	5	2	9	16	5	1	5	11	7	6	5	18	8	37	65
	(%)	(9.2)	(7.7)	(0.0)	(16.9)	(7.7)	(3.1)	(13.8)	(24.6)	(7.7)	(1.5)	(7.7)	(16.9)	(10.8)	(9.2)	(7.7)	(27.7)	(12.3)	(56.9)	(100.0)

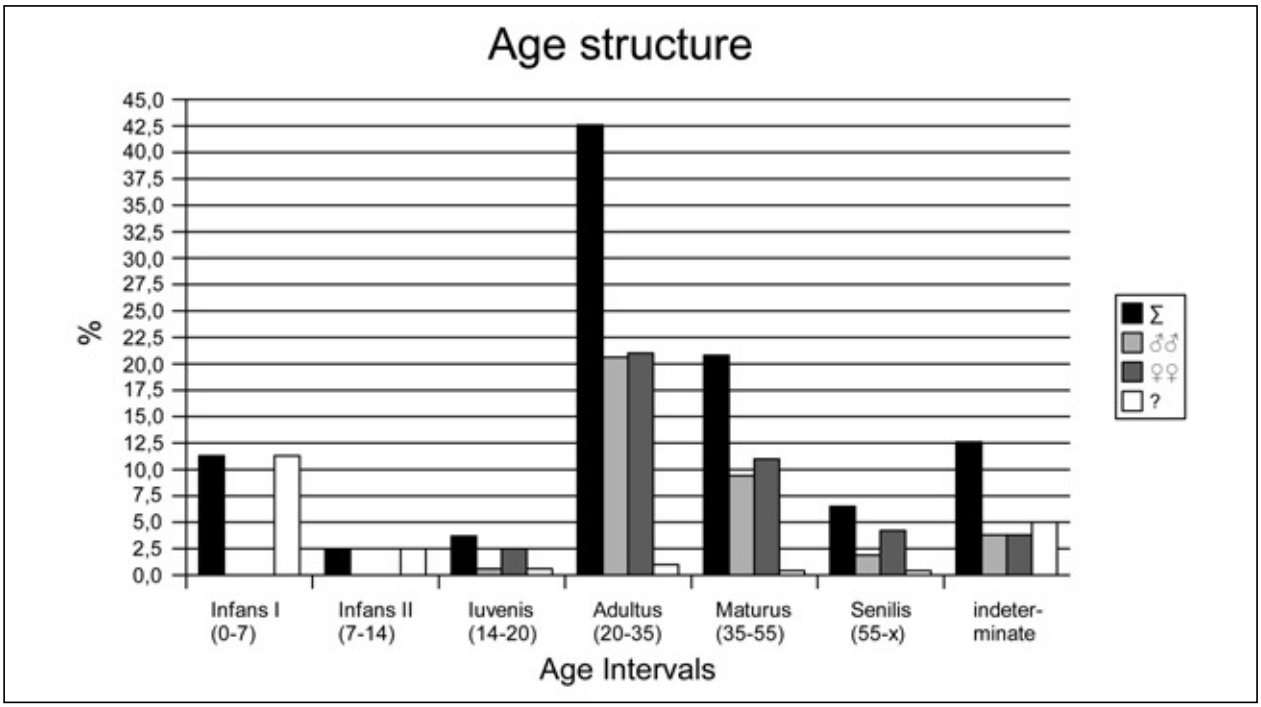
? - indeterminate, Σ - sum, d. - degree of articulation, PC - skeletons displaying pathologies

Table 4. Selected pathologies observed on the bones: H - enamel hypoplasia, S - degenerative spinal changes, J - generative joint changes, A - iron deficiency-related changes, C - caries

expressed by real and not integer values appeared as the result of taking into account in the analysis cases in which the age determination was less precise and thus covered more than one category at a time. In view of their biological character, the ranges of particular groups given in years of age have been supplied here in parentheses merely for general orientation purposes.

Basic paleopathological analysis[7] covered 65 skeletons of all three phases of the burial ground (including 26 male, 24 female and 15 indeterminate). It demonstrated (*Table 4* and *Chart 3*) that 16 individuals suffered from degenerative spinal changes. Of these, five were light, two of average severity and nine very strongly articulated. Joint changes were also included in this group. Both kinds of change were observed more frequently in men. Considering the relative gender balance observed in the material, it appears justified to presume that men in the examined society, more than women, took up activities that burdened their joints and spinal column.[8)]

Porotic hyperostosis changes caused by iron deficiency (*cribra orbitalia* and others) were observed in four (36.36%) of the total number of 11 juvenile individuals (which makes for 73.33% of all 15 of the examined individuals whose gender could be determined) and in nine (34.62%) of the men and five (20.83%) of the women.



? - indeterminate, Σ - sum

Chart 2. Age at death of individuals buried in the Upper Necropolis.

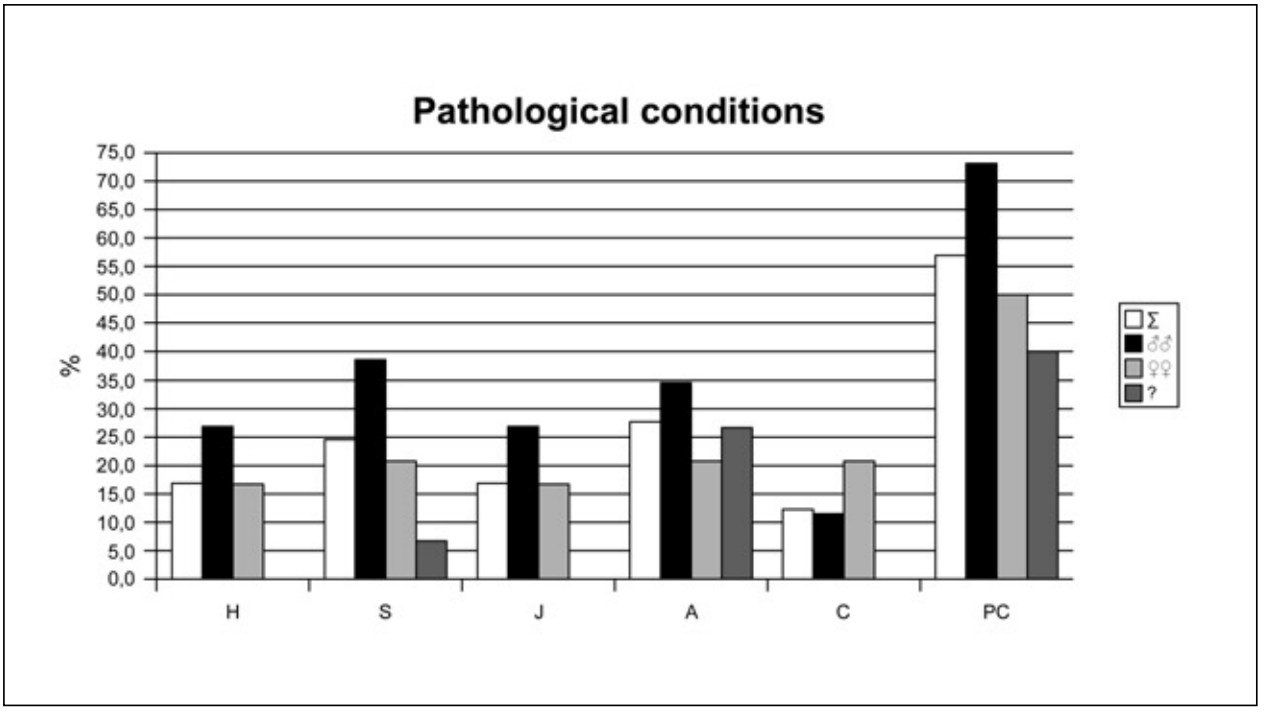
7 For an excellent guidebook in this respect, cf. A.C. Aufderheide, C. Rodriguez-Martin, The Cambridge Encyclopedia of Human Paleopathology (Cambridge 1998).

8 More studies are necessary to confirm or reject these preliminary conclusions.

Enamel hypoplasia, which is a pathology very strongly correlated with nutrition stress during dental formation,[9] was recorded in no more than 16.92% adult individuals. No such defects were noted among children in the sample.

Caries were observed understandably only in adult individuals, amounting to no more than 12.31% of the examined skeletons permitting this analysis. It is the only pathological category, in which more women were represented.

Further anthropological studies on skeletal material from the Islamic cemeteries on Kom el-Dikka will be aimed at reconstructing as full a picture as possible of the social and living conditions of the examined population. Anthropological examination will cover all currently excavated material.



? - indeterminate, Σ - sum

Chart 3. Frequency (in percent) of selected pathologies observed on the bones of examined individuals (2004/2005 season): H - enamel hypoplasia, S - degenerative spinal changes, J - generative joint changes, A - iron deficiency-related changes, C - caries

9 For a review of research methods concerning paleopathological analysis of teeth, cf. K.W. Alt, F.W. Rösing, M. Teschler-Nicola (eds), Dental Anthropology. Fundamentals, Limits and Prospects (Vienna 1998).