

## NEW DATA ON THE AVAR PERIOD POPULATION OF THE VÁC REGION

B. G. MENDE

*Archaeological Institute, Hungarian Academy of Sciences, H-1014 Budapest, Uri u 49., Hungary*

(Received: December 10, 1996)

### Abstract

The approximately 250 years spent by the ethnic groups of the Avar Empire in the Carpathian Basin created an almost inexhaustible source of data for historical anthropology from methodological, typological and taxonomic points of view. Several cemeteries, dated to the 7th-8th centuries, are known from the area between the Danube and Tisza rivers. Mongolid-Europomongolid characteristics occur among their osteological materials. In spite of their small number, the graves excavated at the Vác 44 site clearly reflect the heterogeneity observed in hundreds of burials in cemeteries that were used until the Late Avar Period. The number of children is smaller than expected. Their absence is especially marked in the Infans II age group. The balanced gender composition and age distribution of the material can readily be interpreted in the older age groups. The material available for taxonomic studies is mixed. Europid elements dominate, but Mongolid-Chamaecranic and Sinid characters also occur.

*Key words:* palaeoanthropology, Avar Period, region between the Danube and Tisza rivers, Mongolid characters.

### Introduction

In 1995, a segment of a cemetery was uncovered during the course of rescue work relating to road construction at the Vác 44 site. The excavations were carried out by employees of the Ignác Trágor Museum in Vác. According to the field director, archaeologist LÁSZLÓ SIMON, the graves represent a segment of a cemetery (possibly containing hundreds of similar burials) that may be dated to the Middle and Late Avar Periods. The restoration and analysis of the bone material was carried out in the Archaeological Institute of the Hungarian Academy of Sciences. Since the skeletons, and especially the crania, were poorly preserved, even the most meticulous restoration work could be aimed only at the reconstruction of the greatest possible number of measurements for the purposes of publication. It must be mentioned that the representative value of the data thus obtained is not sufficient for firm conclusions to be drawn concerning the population interred in the unexcavated parts of the cemetery. The heterogeneity of the picture that emerged during the evaluation is suggestive of the possibility that the entire population in this cemetery was similarly mixed, as is characteristic of cemeteries used until the Late Avar Period. Due to the limited length of this study, only the metric and morphological traits will be presented here. Further

research will be required for an evaluation of the pathological phenomena and epigenetic characteristics.

Avar Period populations have been observed in several cemeteries in the Vác region. These include the sites at Váchartyán (BÁTAI, 1952; LIPTÁK, 1957, 1959; FERENCZY, 1963) and Vác-Kavicsbánya (GYENIS, 1968; FERENCZ, 1981). Anthropological materials from the region between the Danube and Tisza rivers have previously been classified from various points of view (WENGER, 1967).

### Materials and methods

The excavated section of the cemetery contained the remains of 92 identifiable individuals. Skulls and postcranial parts were equally badly preserved. Detailed craniometric studies could therefore be carried out only on 14 men and 10 women. Of the long bones, data on 27 and 17 specimens, respectively, were available for estimations of stature.

The ages at death for adults were determined via the inner structure of the proximal epiphysis of the humerus (H) and femur (F), as well as the surface of the facies symphyseos ossis pubis (FS) (NEMESKÉRI et al., 1960). Evaluations were carried out in the system developed by SJÖVOLD (1975). Patterns of toothwear (MILES, 1963; PERIZONIUS, 1981) and classification of the medial epiphysis of the clavicle in the 18-30-year age interval (SZILVÁSSY, 1978) were recorded as well. In the case of juveniles, an ossification table based on X-ray methodology (SCHINZ et al., 1952) was used. Epiphyseal closures tabulated by BROTHWELL (1981) and the recommendations of FEREMBACH et al. (1979) were additionally taken into consideration. In the case of children, tables of dental development were used (SCHOUR and MASSLER, 1941; UBELAKER, 1984). Measurable long bones were developed by using the method of STLOUKAL and HANÁKOVÁ (1978). Due to the poor preservation of the bones, in a number of cases (16), ages over 23 years were pooled in the 23-x category.

Sex determinations were carried out by using 22 characteristics (ÉRY et al., 1963), in addition to the description of sexual characteristics on the entire skeleton and skull and examination of the sulcus praeauricularis. In the case of juveniles, sexing was performed only when skeletal traits permitted a reliable appraisal. Whenever sexual characteristics were not available for study, sexing was attempted by using absolute measurements.

Morphometric studies of the skull and postcranial skeleton were carried out in the system developed by MARTIN (MARTIN and SALLER, 1957; in KNUSSMANN, 1992). Skull capacity was calculated following the method of PEARSON et al. (1903). Statures were estimated on the basis of tabulated data for both sexes and all races published by SJÖVOLD (1990). Skulls were classified into the categories defined by ALEKSEYEV and DEBETS (1964), while work by LIPTÁK provided the basis for taxonomic analyses (FARKAS, 1972).

### Results and discussion

The results concerning the age at death and the distribution of the sexes demonstrate that the number of children was less than usual (below 25%). The number of adults was small as well. Representatives of the mature age group, on the other hand, made up approximately one-third of all identifiable skeletons (even if the 23-x age determinations and the two transitional age groups are not included within the group of matures). The distribution of the sexes is balanced both in the entire section excavated and in its sub-divisions by age groups. This main trend of sex distribution is not even altered by the presence of some sixteen 23-x individuals who represent a broad range of age. The question remains, however, as to whether these data are valid for the entire

cemetery. Therefore, they should not be uncritically extrapolated to the age and sex distributions of the entire population (Table 1).

Table 1. Distribution according to sex and age.

Age group	Males	Females	Uncertain	Together
Infans I	-	-	10	10
Infans II	-	-	7	7
Juvenis	1	2	1	4
Adultus	5	1	-	6
Maturus	18	11	-	29
Senilis	2	5	-	7
Ad-Mat.	2	4	-	6
Mat-Sen.	3	4	-	7
23 - x	4	11	1	16
Total	35	38	19	92

Due to the poor state of preservation, craniometric and morphological studies could be carried out on the skulls of only 14 men and 10 women. Since the resulting sets of data are incomplete, they do not sufficiently represent the entire series. Consequently, high range conclusions had to be avoided (Table 2).

Male skulls were mesocranic-brachyranic, ortho-hypsicranic and tapeinocranic-acrocranic even in the case of porion indices (20:1, 20:8). In terms of the frontal index, most foreheads were stenometopic and eurymetopic. The few indices of the facial part were hypereuryprosopic-euryprosopic, while the upper part was of euryene-meseneleptene type. The orbitae were chamaeconch, while values of the nasal index were indicative of the chamaerrhine type. The cranial capacity was euen-aristencephalic. When the morphological traits were classified, the set of skulls was heterogeneous in both the norma verticalis and the norma occipitalis. A pentagonoid outline could be singled out as one of the main components, while shapes described as "bomb", "house" and "tent" could also be seen from the occipital aspect. The development of the glabella ranged between 3 and 5 on BROCA's classification, while the entire range of categories (1 to 5) could be observed in the case of the protuberantia occipitalis externa. In the individuals available for study, moderate and better expressed alveolar prognathia were also seen. The apertura piriforme, revealed an athropine nasal opening and sulcus praenasalis. The profile line of the occipital region was also heterogeneous. A curvo-occipital outline was the only noteworthy trait. Flattened lambda regions did not appear, or were present, but in a moderate form.

Female skulls fell into ALEKSEYEV's dolichocranic-mesocranic, orthocranic and acrocranic categories. They were metrio-eurymetopic in terms of frontal indices. As far as the skull capacity was concerned, the skulls of the women were euen- but mostly aristencephalic. An insufficient number of data were available for characterization of the facial part. As regards the morphological traits of the norma verticalis, most skulls were ovoid and pentagonoid, while the norma occipitalis revealed the aforementioned tent and house shapes. The glabella scores were 2-3 on the BROCA scale, while the

protuberantia occipitalis externa fell within the interval 1-3. The profile line of the occipital region was curvo-occipital or slightly curvo-occipital. Flattened lambda regions were unusual or are present only in a moderate form.

Table 2. The most important measurements and indices of the skull.

Martin no.	N	MALES			N	FEMALES		
		V	M	s		V	M	s
1	14	170—193	181.4	6.67	10	170—194	179.0	7.69
5	5	98—106	101.2	3.56	5	97—106	100.4	3.78
8	12	137—154	144.0	5.64	10	126—150	135.7	6.09
9	14	88—104	96.3	4.41	9	89—103	97.9	4.51
10	14	113—129	121.2	5.13	9	110—119	115.2	3.42
11	12	113—136	124.7	6.69	10	112—127	117.9	7.06
12	11	105—131	113.3	6.74	9	102—115	108.1	4.28
17	6	123—146	134.5	8.24	5	119—139	129.6	7.50
20	5	104—122	114.4	6.88	2	112—113	112.5	0.71
23	11	495—545	520.8	16.56	7	485—534	509.3	16.51
40	3	95—105	99.3	5.13	1	—	—	—
43	6	99—113	106.7	6.22	5	96—104	100.4	3.21
44	5	97—107	101.8	3.70	4	91—97	94.0	2.94
45	7	132—140	134.7	2.69	5	117—129	122.6	5.03
46	6	94—104	97.8	3.82	4	86—97	93.3	4.99
47	4	103—130	112.5	12.01	2	106—125	115.5	13.43
48	5	65—80	71.0	6.00	2	62—66	64.0	2.83
51	5	39—49	43.2	3.77	4	32—42	38.0	4.55
52	5	28—36	31.2	3.27	4	33—40	34.8	3.50
54	4	25—27	26.0	1.15	2	25—26	25.5	0.71
55	5	41—56	49.8	5.54	2	49—49	49.0	0.00
60	4	56—64	61.0	3.46	1	—	—	—
61	3	62—65	63.3	1.53	1	—	—	—
62	4	39—46	43.5	3.11	1	—	—	—
63	3	40—42	41.0	1.00	1	—	—	—
65	13	110—129	120.7	5.96	7	100—126	115.3	8.06
66	13	87—112	101.2	6.83	9	83—103	93.7	6.56
68	14	67—83	76.3	4.95	9	65—76	71.7	3.74
69	13	29—37	32.3	2.06	8	28—35	30.5	2.20
70	14	58—73	63.9	4.03	8	52—63	56.5	4.04
71	14	27—36	32.1	2.81	9	26—33	29.4	2.13
72	1	—	—	—	1	—	—	—
75	1	—	—	—	1	—	—	—
75/1	1	—	—	—	1	—	—	—
79	13	115—130	121.2	4.96	9	124—134	129.2	3.63
38	8	1298—1550	1471.3	87.19	7	1243—1380	1303.3	43.62
8 : 1	12	73.4—88.4	79.5	4.39	10	68.1—87.2	7.9	5.42
17 : 1	5	69.9—76.6	74.6	4.36	5	69.2—72.0	70.9	1.06
20 : 1	6	61.2—75.6	65.5	5.54	2	63.8—65.1	64.5	0.92
17 : 8	5	88.4—105.8	94.1	7.34	5	79.3—104.8	95.2	10.05
20 : 8	6	73.4—91.7	81.6	7.45	2	84.3—85.5	84.9	0.85
9 : 8	11	63.3—73.8	67.5	3.16	9	64.7—76.3	70.0	3.75
47 : 45	5	64.8—97.0	79.6	11.87	2	90.6—100.8	95.7	7.21
48 : 45	5	48.6—59.7	52.7	4.79	2	52.8—53.0	52.9	0.14
52 : 51	5	67.4—83.7	72.4	6.59	4	78.6—89.0	82.0	4.72
54 : 55	4	49.0—65.9	54.5	7.73	2	51.0—53.1	52.1	1.48
61 : 60	3	92.2—101.6	97.9	5.03	1	—	—	—
63 : 62	3	86.9—95.5	91.2	4.30	1	—	—	—

The measurements and indices of the skulls and the distribution of metric and morphological traits are listed in Tables 3 and 4.

Table 3. The distribution of craniometric characteristics.

Indices (Martin)***	Characteristics	Male	Female	Together
8 : 1	Hyperdolichoecranic	65.0 - 69.9	-	2
	Dolichoecranic	70.0 - 74.9	2	1
	Mesocranic	75.0 - 79.9	5	5
	Brachycranic	80.0 - 84.9	4	1
	Hyperbrachycranic	85.0 - 89.9	1	1
	Total:		12	10
17 : 1	Chamaecranic	x - 69.9	1	1
	Orthocranic	70.0 - 74.9	2	4
	Hypsicranic	75.0 - x	2	-
	Total:		5	5
20 : 1	Chamaecranic	x - 57.9	-	-
	Orthocranic	58.0 - 62.9	3	-
	Hypsicranic	63.0 - x	3	2
	Total:		6	2
17 : 8	Tapeinocranic	x - 91.9	3	1
	Metrioecranic	92.0 - 97.9	1	-
	Akroecranic	98.0 - x	1	4
	Total:		5	5
20 : 8	Tapeinocranic	x - 79.9	3	-
	Metrioecranic	80.0 - 85.9	1	2
	Akroecranic	86.0 - x	2	-
	Total:		6	2
9 : 8	Stenomietopic	x - 65.9	5	1
	Metriometopic	66.0 - 68.9	2	3
	Eurymietopic	69.0 - x	4	5
	Total:		11	9
47 : 45	Hyperuryprosopic	x - 79.9	2	-
	Euryprosopic	80.0 - 84.9	2	-
	Mesoprosopic	85.0 - 89.9	-	-
	Leptoprosopic	90.0 - 94.9	-	1
	Hyperleptoprosopic	95.0 - x	1	1
	Total:		5	2
48 : 45	Euryene	45.0 - 49.9	2	-
	Mesene	50.0 - 54.9	1	2
	Leptene	55.0 - 59.0	2	-
	Total:		5	2
52 : 51	Chamaekonch	x - 75.9	4	-
	Mesokonch	76.0 - 84.9	1	3
	Hypsikonch	85.0 - x	-	1
	Total:		5	4
54 : 55	Leptorrhine	x - 46.9	-	-
	Mesorrhine	47.0 - 50.9	1	-
	Chamaerrhine	51.0 - 57.9	2	2
	Hyperchamaerrhine	58.0 - x	1	-
	Total:		4	2
38	Oligencephalic	Male x - 1300	1	-
	Euencephalic	1301 - 1450	2	4
	Aristencephalic	Female x - 1150 1151 - 1300	5	3
	Total:	1451 - x	8	7
		1301 - x		
Stature	small	Male 150.0 - 159.9	4	2
	small-medium	160.0 - 163.9	4	5
	medium	164.0 - 166.9	6	4
	tall medium	167.0 - 169.9	5	3
	tall	170.0 - 179.9	7	3
	Total:	Female 140.0 - 148.9	26	17
		149.0 - 152.9		
	153.0 - 155.9			
	156.0 - 158.9			
	159.0 - 167.9			

\*\*\* Indices 61: 60 and 63 : 62 are not shown due to the small sample size.

Table 4. The distribution of craniomorphological characters.

Characteristics	Male	Female	Together	
Norma verticalis	ovoid	—	2	2
	pentagonoid	3	2	5
	spheroid	2	—	2
	ellipsoid	1	—	1
	ovoid-pentagonoid	4	5	9
	ovoid-ellipsoid	1	1	2
	pentagonoid-spheroid	2	—	2
Total:	13	10	23	
Norma occipitalis	bomb	5	2	7
	house	4	2	6
	tent	4	6	10
	Total:	13	10	23
Glabella	Broca 1	—	1	1
	Broca 2	1	7	8
	Broca 3	6	2	8
	Broca 4	4	—	4
	Broca 5	2	—	2
	Total:	13	10	23
Protuberantia occipitalis externa	Broca 0	—	1	1
	Broca 1	2	6	8
	Broca 2	6	3	9
	Broca 3	2	—	2
	Broca 4	1	—	1
	Broca 5	2	—	2
Total:	13	10	23	
Fossa canina	1. filled up	2	—	2
	2. shallow	1	1	2
	3. moderate	1	—	1
	4. deep	—	1	1
	5. very deep	1	—	1
	Total:	5	2	7
Spina nasalis anterior	Broca 3	1	1	2
	Broca 4	3	—	3
	Total:	4	1	5
Prognathia alveolaris	2. moderate	2	—	2
	3. marked	2	1	3
	Total:	4	1	5
Apertura piriforme	2. fossa praenasalis	3	1	4
	3. anthropine	2	1	3
	Total:	5	2	7
Occipital arch	1. bathrocranial	3	—	3
	2. curvo-occipital	5	8	13
	3. moderately curvo-occipital	4	2	6
	4. planoccipital	1	—	1
	Total:	13	10	23
Flatness of the lambda region	1. none	6	2	8
	2. moderate	5	8	13
	3. marked	1	—	1
	Total:	12	10	22

SJØVOLD'S tabulated estimates based on the long bones of the postcranial skeleton revealed a heterogeneous picture for the statures of both men and women. The majority of the men were medium, medium tall or tall, while variants of medium stature dominated among the women. This may be due to the fact that only in a very few cases

was it possible to carry out calculations using all six long bone measurements recommended by SJØVOLD. In terms of body proportions, the claviculo-humeral and radio-humeral indices were homogeneous for the men. On the other hand, the tibio-femoral indices were indicative of eurysome and normosome lower leg formations. Due to the small sample size, only this latter extremity segment could be characterized for the women. Similarly as for the legs of the men, the indices pointed to relatively short, but well-proportioned lower legs.

Five men's skulls were available for purposes of taxonomic analysis. It was only in these cases that almost the entire neurocranium and viscerocranium were available for measurement and morphological description. Skull 36 showed Sinid characters, and Skull 61 show Inner-Asiatic Sinid traits. Among the Europid types, Skull 80 represented the brachyranic group with strong Alpine and reduced Cromagnoid-A characters. Skull 108 was dolichocranic, although it did not have a narrow face. He also displayed Nordoid and Cromagnoid-A elements. Skull 121 appeared most complex from a taxonomic point of view. It resembled a mixture between acrocranic, eurytopic and perhaps Nordoid and Atlantomediterranean characteristics.

### Conclusions

The excavated section of the Vác 44 cemetery was used between the late 7th and the early 9th centuries. The investigations carried out to date support observations that the material from cemeteries starting in the Middle Avar Period onwards usually contains remains of a heterogeneous population in the region between the Danube and Tisza rivers and also in Transdanubia. Naturally, due to the small size of the data set under discussion here, this trend can be generalized to only a limited extent. Ages at death are indicative of a relatively old population, with balanced sex ratios in all age groups. Mongolid elements occur and two of the few skulls available for taxonomic study show mixed characters. Some Mongolid types in the nearby Váchartyán cemetery are dolichocranic (Baikal type; LIPTÁK, 1959). No similar type was found at Site 44. At the same time, the brachyranic component at Váchartyán is Europeo-mongolid, and brachyrania at 44 is accompanied by Sinid and Inner-Asian traits. The chamaecrania observed in the cemetery at Vác - Kavicsbánya is manifested in the form of Europid low skull formation but only two skulls display Mongolid characters. A combination of dolicho-mesocran Cromagnoid-A and Mediterranean characters occurs in all three cemeteries. Nordoids and Europid brachyrans, the main components described from Vác - Kavicsbánya (the geographically closest cemetery), do not appear as independent types at Vác 44. The small sample size did not permit subdivision into smaller groups on either a metric or a morphological basis. Only the skull capacity allowed the population structure to be considered homogeneous.

## References

- ALEKSEYEV, V. P. and DEBETS, G. F. (1964): *Kraniometrija. Metodika antropologiceszkij isszkledovnij.* - Izdatel'stvo Nauka, Moskva, 112-127 pp.
- B. BÁTAI, E. (1952): A váchartyáni avar temető csontvázleteleinek embertani vizsgálata. - *Ann. Hist.-nat. Mus. Nat. Hung.* 2, 213-224.
- BROTHWELL, D. (1981): *Digging up bones. The Excavation, treatment and study of Human Remains.* - British Museum, London, 51-69 pp.
- ÉRY, K., KRALOVÁNSZKY, A. and NEMESKÉRI, J. (1963): Történeti népességek rekonstrukciójának reprezentációja. - *Antrop. Közl.* 7, 41-90.
- FARKAS, Gy. (1972): *Antropologiai praktikum I. Paleoantropologiai metodikák.* - JATE, Szeged, 28-136, 200-216 pp.
- FEREMBACH, D., SCHWIDETZKY, I. and STLOUKAL, M. (1979): Empfehlungen für die Alters- und Geschlechtsdiagnose am Skelett. - *Homo* 30, 2, 1-32.
- FERENCZ, M. (1981): Some data to the palaeoanthropology of the Avar Periods population in Hungary. - *Anthrop. Hung.* 17, 23-64.
- FERENCZY, L. (1963): A váchartyáni avar kori temető. - *Arch. Ért.* 84-107.
- GYENIS, Gy. (1968): Die Untersuchung des anthropologischen Materials des Vácer Gräberfeldes ausden VIII-IX. Jahrhunderten - *Annales Univ. Sci. Bud. de Rolando Eötvös nom., Sec. Biol.* 9-10, 151-188.
- KNUSSMANN, R. (1992): *Anthropologie. Handbuch der Vergleichenden Biologie des Menschen. II. Allgemeine Anthropologie.* - Stuttgart, Jena, New York
- LIPTÁK, P. (1957): Avarien und Magyaren im Donau-Theiss Zwischenstromgebiet (Zur Anthropologie des VII-XIII. Jahrhunderts). - *Acta Arch. Hung.* 7, 199-268.
- LIPTÁK, P. (1959): The "Avar Period" Mongoloids on Hungary. - *Acta Arch. Hung.* 10, 251-279.
- MARTIN, R. and SALLER, K. (1957): *Lehrbuch der Anthropologie.* - Gustav Fischer Verlag, Stuttgart.
- MILES, A. E. W. (1963): The Dentition in the assessment of individual age in skeletal material. In: BROTHWELL (ed.): *Dental Anthropology Symposium Soc. Study Human Biology* 5, 191-209.
- NEMESKÉRI, J., HARSÁNYI, L. and ACSÁDI, Gy. (1960): Methoden zur Diagnose des Lebensalters von Skelkettfunden. - *Anthrop. Anz.* 24, 71-88.
- PEARSON, K., JACOB, S. and LEE, A. (1903): *Craniological notes.* - *Biometrika* 2, 338.
- PERIZONIUS, W. R. K. (1981): Diachronic dental research on human skeletal remains excavated in the Netherlands I. - *Berichten van de Rijksdienst voor het Oudheidkundig Bodemaderzoek* 31, 369-413.
- SCHINZ, H., BAENSCH, W., FRIEDL, E. and UEHLINGER, E. (1952): *Lehrbuch der Röntgen-Diagnostik.* 5. Ausgabe 1-4. Stuttgart.
- SCHOUR, I. and MASSLER, M. (1941): Development of Human dentition. - *J. Am. Dent. Assoc.* 28, 153-1160.
- SJØVOLD, T. (1975): Tables of combined method for determination of age at death given by NEMESKÉRI, HARSÁNYI and ACSÁDI. - *Anthrop. Közl.* 19, 9-22.
- SJØVOLD, T. (1990): Estimation of stature from long bones utilizing the line of organic correlation. - *Human Evolution* 5, 431-447.
- STLOUKAL, M. and HANÁKOVÁ, H. (1978): Die länge der Längsknochen altslawischer Bevölkerungen unter besonderer Berücksichtigung von Wachstumsfragen. - *Homo* 29, 53-69.
- SZILVÁSSY, J. (1978): Ein Method zur Altersbestimmung mit Hilfe der sternalen Gelenkflächen der Schlüsselbeine. - *Mitt. Anthrop. Ges.* 61, 1-28.
- UBELAKER, D. H. (1984): *Human Skeletal Remains. Excavation, analysis, interpretation.* - London
- WENGER, S. (1967): Adatok az avarok népességének antropológiájához. - *Anthrop. Közl.* 11, 199-215.