

Dentition State of the Slav - Avar Population of Šebastovce (Eastern Slovakia)

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ABSTRACT The state of the dentition was evaluated in 141 adult individuals from Slav - Avar burial ground at Šebastovce (Eastern Slovakia). Caries frequency, i.e. the percentage of individuals affected by dental decay, was 91.49%. Caries intensity, i.e. the percentage of teeth affected by dental decay, reaches 26.94%. Caries rate in the population of Šebastovce is higher than in other Slav and Early - Medieval populations living on our territory.

INTRODUCTION

The study of the history of dental diseases and its confrontation with informations on the life environment of Man in various Age is conducive towards a better understanding of the pathogenesis causes and its prevention. Dental caries is a multicausal disease, of which not all causes are yet fully known. The antecedents of dental caries occurrence in people belonging to civilized nations must be looked for in their dietary practices and in the quality of their nutrition.

It is well known that dental caries in Man was already present in paleolithic times (Novák, 1981). During the Mesolith, caries prevalence expressed as percentage of decaying teeth in the total number of teeth examined varied between 5 and 10 %. In the Lower Bronze Age the caries rate in Middle Europe was between 2 and 3 %, while in Upper Bronze Age in Southern Moravian skulls it was found to lie at 8 % of the teeth (Novák, 1981).

According to archeologists, the nutrition of the Ancient Slavs consisted predominantly of meat (Andrik, 1960). As cultivated cereals they knew wheat and millet, but it may be taken into consideration that the flour used by them con-

tained also sand from the handdriven millstones. This admixture of stone grit was causing an abrasion of the masticatory teeth surfaces, and this in turn could indirectly be associated with low rates of dental caries (Andrik, 1960).

A predominant role in the increase of caries prevalence in populations was played especially by the consumption of refined sugars and white flour, the production of which was begun in this country at the end of the 18-th century (Andrik and Münchnerová, 1961). As a consequence of this the frequency of decay in the fissures and pits of the masticatory surfaces increased, the rates of which had been lower in the abraded dentitions of the early Slavs. Caries was also spreading, mostly approximal ones, to the frontal teeth and nowadays the occurrence of caries in deciduous dentitions is very markedly higher than it was in earlier, historical populations (Veselá and Javorka, 1988).

The metrical and morphological aspects of the dentition were investigated in many historical populations living on the territory of Slovakia. But there are only a few papers, in which the caries rates were examined in detail (Andrik, 1960; Andrik and Münchnerová, 1961).

The main significance of the present paper consist in the fact that it contains for the first time a more detailed evaluation of dental decay and other pathological findings in a historical population from a burial place situated on present territory of Slovakia.

MATERIAL AND METHODS

The Slav - Avar cemetery Šebastovce lies in Eastern Slovakia, in the basin of Košice. According to the burial rites and concomitant

findings the burials have been dated into the advanced phase of the Slav – Avar epoch, between the middle third of the 7-th century and the boundary of the 8-th and 9-th century A.D. (Budinsky – Krička, 1968).

The sample consisted of 141 adult individuals (54 males, 85 females, and 2 persons of indeterminate gender). We used for our work the age distribution according to Thurzo and Korbačková (1980), who accomplished the anthropological analysis of this burial site. The traits indicating age, gender and degree of sexualization were evaluated according to the classification of Acsádi and Nemeskéri (1970). The age distribution is given in table 1.

Table 1: The age distribution of adult individuals

	Age	Adultus I (20-30)	Adultus II (30-40)	Maturus I (40-50)	Maturus II (50-60)	Senilis (60-)
	N					
Male	54	7	13	16	16	2
%	38.30					
Female	85	22	22	21	15	5
%	60.28					
Interminated	2					
%	1.42					
	141	29	36	37	32	7

The state of dentition and oral health was established on the base of:

- the caries prevalence of the dentition
- the functional abrasion of the dentition
- the atrophy of the alveolar bone tissue.

Caries rates were evaluated according to the stomatological classification, and on the base of these observations we calculated the Frequency of caries (percentage of individuals affected by caries), the Intensity of caries (percentage of cari-

ous teeth), and the DMF index (number of carious teeth, cervical stumps and ante – mortem losses per individual).

The degree of functional abrasion of the dentition was evaluated according to Martin and Saller (1957).

The extent of bone tissue atrophy was measured by means of a sliding gauge and from the separate values we subsequently calculated the mean atrophy value for every age category.

RESULTS AND DISCUSSION

Caries Prevalence

Table 2 gives the numbers of individuals with

intact and carious dentition respectively. An unimpaired dentition was found in 12 individuals (8.51 %), while 129 individuals (91.49 %) exhibited sets of teeth affected by caries or intravital loss. The caries rate in Šebastovce population is higher then data given by other authors for populations from approximately the same epoch, viz. 32 – 35 % by Andrik (1979), 73.81 % by Thurzo (1972), or 75.8 % by Jakab (1977).

Table 2: The numbers of individuals with intact and carious dentition respectively

Intact dentition								Carious dentition							
		Male		Female		Indeterm.				Male		Female		Indeterm.	
Age	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
20-30	4	13.79	2	28.57	2	9.09			25	86.21	5	71.43	20	90.91	
30-40	4	11.11	1	7.69	3	13.64			32	88.89	12	92.31	19	86.36	1
40-50	3	8.11	2	12.50	1	4.76			34	91.89	14	87.50	20	92.24	
50-60	1	3.13			1	6.67			31	96.88	16	100.00	14	93.33	1
60-									7	100.00	2	100.00	5	100.00	
	12	8.51	5	9.26	7	8.24			129	91.49	49	90.74	78	91.76	2

Indeterm. - Individuals of indeterminate gender

Among total of 2537 examined teeth from adult individuals there were 345 carious teeth (13.60 %), 55 cervical stumps (2.17 %) and 504 ante - mortem lost teeth (11.17 %). Thus the intensity of caries reaches 26.94 % (Table 3). As compared with the data of Andrik (1979), i.e. 12%, of Jakab (1977) 22.1 % and of Thurzo (1972) 21.32 % the caries rate in the sample examined by us was higher.

A more informative measure of dental decay is the DMF index, which besides carious teeth includes also ante - mortem losses and cervical stumps. The average number of carious teeth per individual was 6.40, with the index values in the various age groups rising with increasing age. An especially marked tendency towards higher values was apparent for this index in the senilis group - a phenomenon caused mostly by the number of

Table 3: The intensity of caries

Age	ne	Carious teeth		Cervical stumps		Ante-mortem lost teeth		Total
		n	%	n	%	n	%	n
20-30	554	88	15.88	6	1.11	14	1.51	108
30-40	795	98	12.33	9	1.13	82	7.20	189
40-50	588	87	14.80	20	3.40	158	13.34	265
50-60	559	68	12.16	19	3.31	151	14.75	238
60-	41	4	9.76	1	2.44	98	43.75	103
	2537	345	13.60	55	2.17	503	11.17	903

ne-number of examined teeth

Frequency and intensity of dental decay depend upon the age of the individuals, the proportion of carious teeth and of intravital losses changing with age. In younger age group carious teeth predominate, while in older individuals there predominate ante - mortem lost ones, which in the age group "senilis" constitute up to 95.15 %.

intravital losses incident to old age (Table 4).

An interesting picture is yielded by examination of the various caries types by age groups. With increasing age there is a change in the proportion of coronal and cervical caries observable. With increasing age, the share of occlusal cases is lessening and the proportion of approximal coronal and cervical ones is increasing, while

Table 4: The DMF index

Age	N	Male		Female		Indetermined				Total		
		n	DMF	N	n	DMF	N	n	DMF	N	n	DMF
20-30	7	21	3.00	22	87	3.95				29	108	3.72
30-40	13	62	4.77	22	119	5.41	1	8	8.00	23	189	5.25
40-50	16	113	7.06	21	152	7.24				37	265	7.16
50-60	16	139	8.69	15	97	6.47	1	2	2.00	32	238	7.44
60-	2	34	17.00	5	69	13.80				7	103	14.71
	54	369	6.83	85	524	6.16	2	2	5.00	141	903	6.40

N - number of individuals

n - number of carious teeth, cervical stumps and ante-mortem lost teeth

DMF - number of carious teeth per individual

It ought however to be mentioned that not all losses of teeth were due to caries: further causes were possibly also senile losses, periodontal diseases and injuries. Because the caries rate includes all intravital losses and all cervical stumps, the rate of caries intensity is to be interpreted as a maximum value.

cervical carries occurred also in younger people (20 - 30 years olds 15.63 %, 30 - 40 years olds 24.35 %). These circumstances lead to the idea that observed population included in its nutrition finely granulated and sticky foodstuffs, because in older people caries on the dental cervices results from a loss of periodontal height, while in young people cervical caries is inversely

just a sign of a fine, sticky food containing simple carbohydrates.

Andrik (1979) examined the caries frequencies according to their localization in individuals from an early Slav locality and found that the most frequent ones were occlusal and approximal caries cases, while cervical ones occurred only sporadically. The relationship with age was not taken into consideration.

Functional Dental Abrasion

The severity of functional dental abrasion increases with rising age. Individuals aged 20 to 30 years had mostly only obliterated cusps, but the majority of 30 to 40 years olds showed certain spots of dentin exposure. Individuals aged 40 and more had in the majority of cases the enamel worn away on the whole masticatory area. Cases of heavy abrasion, *i.e.*, of crowns obliterated down to the cervix we found sporadically, mostly in the proximity of intravital losses.

The most obliterated individual tooth in almost all age groups was the first molar. The only exception were the female in the senilis group, where the most abraded teeth were the second upper premolar and the second lower molar. The least attrition was observed in the third molar for almost all groups. A difference was found in the males of the age group *maturus* II, where the lower premolars and canines outran the third molars.

Bone Tissue Atrophy

While evaluating the general oral health of Šebastovce population we examined also the bone tissue atrophy of the alveoli and its dependence upon the individual's age. It was found that with increasing age bone tissue atrophy increases too, while in the majority of individuals a uniform reduction of the alveolar bone in the whole dentition was observed.

ANOMALIES AND OTHER PATHOLOGICAL PROCESSES

Teeth Retention

In 141 adult individuals a total of 60 retained teeth was observed (1,33 %), with the great majority representing cases of oligodontia or anodontia of the third molar. Most of these (32) were diagnosed in individuals aged 20 to 30 years.

In females of the age group 20 to 30 years one case of retention of the second upper incisors was found. In two females of this group persisting deciduous teeth were observed: in one case it was the second upper left molar, in the second one the second lower right molar.

In the age group 40 to 50 years there were two cases of retention. One female exhibited retained the second lower incisors, the second female was a case of missing upper right caninus.

One male aged 40 to 50 years showed a persisting the second deciduous upper left molar and missing upper left caninus.

Ostitic Foci

A total of 10 ostitic foci was found in 141 individuals.

In males, there were 6 foci, from which in one case the tooth was lost during his life time, while the remaining 5 teeth were preserved. The cause of origin of one focus was a deep abrasion of the tooth with an open pulp chamber, the other cases being due to caries.

In females, 4 ostitic loci were observed. In one case the tooth was lost ante-mortem, in the remaining three the teeth had remained in alveoli. One focus resulted from abrasion, the others were the consequence of caries.

Periodontopathies

A suspicion of periodontopathy was expressed in 8 cases. Because more pronouncedly atrophy – attacked alveolar processes were absent, the periodontopathies were evaluated according to the severity of diffused intravital losses affecting also the frontal teeth. In some individuals extensive inflammatory processes with subsequent destruction of alveolar bone were present. One affected person fell into the age group of 30 to 40 years, while the other individuals were 40 or more years old.

CONCLUSION

The caries rate in this population is higher than in other Slav and Early Medieval population groups living on the territory of Slovakia. According to the findings reported here it can be assumed that the nutrition of the population from Šebastovce contained both cariogenic and abrasive components.

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