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Dental Caries from Osteological Material from Znojmo-Hradiště

Jarošová I.

Ústav antropologie, Přírodovědecká fakulta MU, Brno,
vedoucí prof. PhDr. J. Malina, DrSc.

Summary

The aim of this paper is to observe the caries development in humans from Znojmo-Hradiště. This investigation was performed on the osteological material (in possession of the Department of Anthropology, Faculty of Science, Masaryk University Brno), in deliberately selected probes, having fulfilled the following requirements: 1. According to the time period – the skulls came from of archaeologically determinable time period. 2. According to the sex – the skulls were divided into males and females. 3. According to the age – only group of adults and mature individuals were selected. 4. According to the dental type. The aim of this paper is to find out if there is a difference in caries incidence between two burial grounds from Znojmo-Hradiště.

According to the time period the values of caries intensity and frequency in Znojmo-Hradiště were lower in medieval population. According to the sex the medieval women had slightly more decayed teeth than men, while in modern time period it was reversed. According to the age the caries intensity and frequency grow with age, being higher in modern population. According to the dental types the most decaying teeth were first and second molars in both samples from Znojmo-Hradiště. There were more decayed teeth from maxillas and from the right side in both kinds of samples.

Key words: dental anthropology – dental caries – caries intensity – caries frequency – Znojmo-Hradiště

Jarošová I.:
Zubní kaz z antropologického materiálu ze Znojma-Hradiště

Předložená práce se zabývá studiem výskytu zubního kazu na antropologickém materiálu z lokality Znojmo-Hradiště. Tento výzkum proběhl na Katedře antropologie Přírodovědecké fakulty Masarykovy univerzity v Brně a byly v něm studovány trvalé dentice zemřelých z archeologické lokality Znojmo-Hradiště pomocí stomatologických sond. Studovaný materiál byl hodnocen z hlediska tří kritérií: Podle časového období byli jedinci rozděleni na středověkou a novověkou populaci, podle pohlaví na jedince určené jako mužské pohlaví a jedince určené jako ženské pohlaví a konečně podle třetího kritéria byli tito jedinci rozděleni podle věku na kategorie adultus (20–39 let) a maturus (40–59 let). V neposlední řadě byl výskyt zubního kazu studován rovněž z hlediska zubních typů. Cílem tohoto příspěvku je zjistit, zda existuje rozdíl ve výskytu zubního kazu mezi středověkou a novověkou populací ze Znojma-Hradiště.

Podle časového období byl u středověké populace ze Znojma-Hradiště zjištěn nižší výskyt intenzity i frekvence zubního kazu. Ženy ve středověku měly dentice postižené zubním kazem ve větší míře než tomu bylo u mužů ve středověku, zatímco u novověké populace tomu bylo naopak. Stoupající tendence intenzity i frekvence zubního kazu v závislosti na věku byla markantnější u sledované novověké populace. Z hlediska zubních typů byly kazem postiženy především první trvalé moláry, s menší mírou pak druhé trvalé stoličky bez závislosti na archeologickém období. Z hlediska zubních kvadrantů lze říci, že výskyt zubního kazu převládal u obou populací v horní čelisti, konkrétně pak v horním pravém kvadrantu.

Klíčová slova: dentální antropologie – zubní kaz – intenzita zubního kazu – frekvence zubního kazu – středověká a novověká populace – Znojmo-Hradiště

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INTRODUCTION

The oral cavity functions first and foremost as a food processor. The composition and consistency of foods consumed determine the kinds of microorganisms that flourish in the oral cavity and the nature biomechanical forces affecting the teeth and jaws. Anatomical and pathological studies of the oral cavity thus provide direct evidence of type of diet. Diagnosis and interpretation of dental diseases and their analysis in a palaeodemographic framework are an indispensable part of any attempt to reconstruct past lifeways from human skeletal remains [5].

The dental caries is one of the most widely spread off human disease. Dental caries is a progressive demineralization of the tooth caused by localized fermentation of food sugars by dental

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plaque. In our country almost 100% of the population of all age groups is affected.

MATERIAL AND METHODS

Znojmo–Hradiště is situated 70 km southwest from Brno in South Moravia (Czech Republic). It is one of the oldest Slavonic fortified settlements preserved from the 9th century, i. e. from the epoch of the Great Moravian Empire. This settlement has been yielding important material for study of the Old–Slavonic population of Middle Ages and modern times. Human remains from which the material for analysis was collected has been explored on a site of the Old-Slavonic culture from Znojmo-Hradiště by Prof. František Kalousek, from Pedagogical Faculty of Masaryk University in Brno. This systematic archaeological research was carried out from 1949 to 1957 [3].

The subject of the examination was burial grounds with 259 skeletons from 243 graves [2], of which 85 adult individuals (from category of adultus up to senilis) were evaluated. The remaining 139 finds were excluded as the splanchnocrania were not well preserved. The 35 human remains were excluded because of subadult age state.

According to the *time period* – this anthropological sample was divided into two groups – the one from medieval (from the 11th – middle of 13th century), the other from modern times (from 16th – 17th century). All those 85 adult individuals were divided according to the *sex and age* [3, 4] (Tab. 1).

When examining the dentition with respect to the caries healthy teeth, caries teeth, radices and intravitally lost teeth were registered. Following features have been evaluated in the individual finds:

Tab. 1. Total number of examined individuals from Znojmo-Hradiště divided according to the time period, sex and age

	MALE	FEMALE	TOTAL
MEDIEVAL			
Adultus I (20–29 years)	5	12	17
Adultus II (30–39 years)	4	4	8
Maturus I (40–49 years)	8	2	10
Maturus II(50–59 years)	3	7	10
Senilis (60–69 years)	4	2	6
TOTAL	24	27	**51**
MODERN TIMES			
Adultus I (20–29 years)	3	5	8
Adultus II (30–39 years)	4	-	4
Maturus I (40–49 years)	5	1	6
Maturus II (50–59 years)	2	3	5
Senilis (60–69 years)	5	6	11
TOTAL	19	15	**34**

1. The number of individuals (n).
2. The number of preserved teeth (Z).
3. The number of caries teeth (C) – caries incidence (the percentage of the decayed teeth from the number of all preserved teeth).
4. The number of preserved dental alveoli (A).
5. The number of teeth lost post mortem and intra vitam (E).
6. Caries intensity – I-CE – (the total percentage of decayed teeth and the percentage of the intravital losses [I-CE = %C + %E = (C/Z) + (E/A)]).
7. Caries frequency – F-CE – (the total percentage of burials with at least one caries, with caries including the intravital losses and with intravital losses [F-CE =%nC+%nE+%nCE = (nC/n) + (nE/n) + (nCE/n)]) [7].
8. The comparative alveolar index – CAI – (a relation between the number of the preserved alveoli and the number of all burials multiplied by 32 [CAI = A / (n* 32)]).
9. The comparative dental index – CDI – (a relation between the number of the preserved erupted teeth and the number of teeth lost intravitam and the number of all burials multiplied by 32 [CDI = (Z+E) / (n* 32)]). [8].
10. The good state/condition of jaws that classify each individual according to the codes [1] (Tab. 2). The code 0 presents already excluded individuals because of subadult age state or not well preserved skulls.

Tab. 2. Codes of the good state/condition of jaws according to Bílý, et al. 1977

CODE	TEETH OF MAXILLA	TEETH OF MANDIBLE
0	missed	missed
1	complete	complete
2	complete	fragmentary
3	fragmentary	complete
4	fragmentary	fragmentary
5	complete	missed
6	missed	complete
7	fragmentary	missed
8	missed	fragmentary

RESULTS AND DISCUSSION

According to time period

I had at my disposal on the whole data concerning 2001 preserved alveoli (A) and, 1182 preserved permanent teeth. Values of caries intensity I-CE in Znojmo-Hradiště were 27.2 by the medieval sample and 63.2 by the modern times sample (Tab. 3).

In my research I started with the set of 85 adult skulls (n) from burial ground Znojmo-

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Tab. 3. Caries intensity presented in Znojmo-Hradiště according to the time period

	A	E	%E	Z	C	%C	I-CE
MEDIEVAL SAMPLE	1146	216	18.8	810	68	8.4	**27.2**
MODERN TIMES SAMPLE	855	368	43.0	372	75	20.2	**63.2**

Tab. 4. Caries frequency presented in Znojmo-Hradiště according to the time period

	nE	%nE	nC	%nC	nCE	%nCE	INTACT	% INTACT	F-CE	n
MEDIEVAL SAMPLE	9	17.6	6	11.8	25	49.0	11	21.6	**78.4**	51
MODERN TIMES SAMPLE	15	44.1	2	5.9	15	44.1	2	5.9	**94.1**	34

Tab. 5. Comparative indexes followed burial ground in Znojmo-Hradiště

	CDI	CAI
MEDIEVAL SAMPLE	62.9	70.2
MODERN TIMES SAMPLE	68.0	78.6

Table 6. The good state/condition of jaws in followed burial grounds in Znojmo-Hradiště.

CODE	MEDIEVAL SAMPLE		MODERN TIMES SAMPLE		TOTAL
	Number of individuals	Percentage of individuals	Number of individuals	Percentage of individuals	Total number of ndividuals
1	17	33.3	14	41.2	31
2	3	5.9	2	5.9	5
3	9	17,6	7	20.6	16
4	7	13.7	2	5.9	9
5	0	0.0	1	2.9	1
6	4	7.8	4	11.8	8
7	5	9.8	3	8.8	8
8	6	11.8	1	2.9	7
TOTAL	51	100.0	34	100.0	85

Tab. 7. Caries intensity presented in Znojmo-Hradiště according to the sex

		A	E	%E	Z	C	%C	I-CE
MEDIEVAL SAMPLE	MALE	527	87	16.5	387	35	9.1	**25.6**
	FEMALE	619	129	20.8	423	33	7.8	**28.6**
MODERN TIMES SAMPLE	MALE	470	221	47.0	197	40	20.3	**67.3**
	FEMALE	385	147	38.2	175	35	20.0	**58.2**

Tab. 8. Caries frequency presented in Znojmo-Hradiště according to the sex

		nE	%nE	nC	%nC	nCE	%nCE	INT.	% INT.	F-CE	n
MEDIEVAL SAMPLE	MALE	3	12.5	4	16.7	11	45.8	6	25.0	**75.0**	24
	FEMALE	6	22.2	2	7.4	14	51.9	5	18.5	**81.5**	27
MODERN TIMES SAMPLE	MALE	8	42.1	1	5.3	9	47.4	1	5.3	**94.7**	19
	FEMALE	7	46.7	1	6.7	6	40.0	1	6.7	**93.3**	15

Tab. 9. Caries intensity presented in Znojmo-Hradiště according to the age

			A	E	%E	Z	C	%C	I-CE
MEDIEVAL SAMPLE	MALE	ad (20–39 yrs)	179	17	9.5	139	10	7.2	**16.7**
		mat (40–59 yrs)	281	54	19.2	205	16	7.8	**27.0**
		sen (60–69 yrs)	67	16	23.9	43	10	23.3	**47.2**
	FEMALE	ad (20–39 yrs)	370	35	9.5	298	13	4.4	**13.9**
		mat (40–59 yrs)	214	81	37.9	105	16	15.2	**53.1**
		sen (60–69 yrs)	40	18	45.0	20	4	20.0	**65.0**
MODERN TIMES SAMPLE	MALE	ad (20–39 yrs)	162	26	16.1	121	15	12.4	**28.5**
		mat (40–59 yrs)	170	72	42.4	69	22	31.9	**74.3**
		sen (60–69 yrs)	138	123	89.1	7	3	42.9	**132.0**
	FEMALE	ad (20–39 yrs)	158	30	19.0	100	16	16.0	**35.0**
		mat (40–59 yrs)	92	31	33.7	45	6	13.3	**47.0**
		sen (60–69 yrs)	146	94	64.4	31	11	35.5	**99.9**

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Tab. 10. Caries frequency presented in Znojmo-Hradiště according to the age

			nE	%nE	nC	%nC	nCE	%nCE	INTACT	% INTACT	F-CE	n
MEDIEVAL SAMPLE	MALE	ad (20–39 yrs)	1	11.1	2	22.2	3	33.3	3	33.3	**66.7**	9
		mat (40–59 yrs)	2	18.2	2	18.2	5	45.5	2	18.2	**81.8**	11
		sen (60–69 yrs)	0	0.0	0	0.0	4	100.0	0	0.0	**100.0**	4
	FEMALE	ad (20–39 yrs)	2	12.5	2	12.5	7	43.8	5	31.3	**68.8**	16
		mat (40–59 yrs)	4	44.4	0	0.0	5	55.6	0	0.0	**100.0**	9
		sen (60–69 yrs)	0	0.0	0	0.0	2	100.0	0	0.0	**100.0**	2
MODERN TIMES SAMPLE	MALE	ad (20–39 yrs)	3	42.9	0	0.0	3	42.9	1	14.3	**85.7**	7
		mat (40–59 yrs)	3	42.9	1	14.3	3	42.9	0	0.0	**100.0**	7
		sen (60–69 yrs)	2	40.0	0	0.0	3	60.0	0	0.0	**100.0**	5
	FEMALE	ad (20–39 yrs)	2	40.0	1	20.0	2	40.0	0	0.0	**100.0**	5
		mat (40–59 yrs)	2	50.0	0	0.0	2	50.0	0	0.0	**100.0**	4
		sen (60–69 yrs)	4	66.7	0	0.0	2	33.3	0	0.0	**100.0**	6

Tab. 11. Caries intensity and frequency presented in following burial grounds according to the sex and age (the „total“ values present only values of adultus and maturus – category senilis is excluded)

	MALES						FEMALES					
	I-CE			F-CE			I-CE			F-CE		
	ad	mat	TOTAL	ad	mat	TOTAL	ad	mat	TOTAL	ad	mat	TOTAL
MEDIEVAL SAMPLE	16.7	27.0	23.0	66.7	81.8	75.0	13.9	53.1	27.1	68.8	100.0	80.0
MODERN TIMES SAMPLE	28.5	74.3	49.0	85.7	100.0	94.7	35.0	47.0	39.6	100.0	100.0	99.9

Hradiště. Values of caries frequency F-CE in Znojmo-Hradiště were 78.4 by the medieval sample and 94.1 by the modern times sample (Tab. 4).

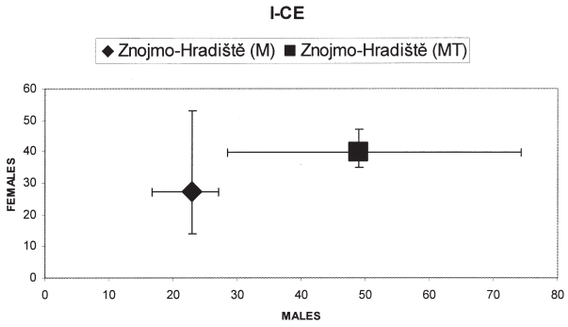
The intactness of osteological material on the level of teeth is presented by comparative indexes CDI and CAI in (Tab. 5). The comparative indexes are especially valuable for the more precise comparison and the statistical evaluation of the dental findings in the skeletal material. The more similar the resulting numbers are the smaller is the probability of errors [7]. Table 6 presents results of the the good state/condition of jaws on the level of individuals. As it could be inferred from this comparison, the most occurring individuals are those with presented both jaws.

According to sex

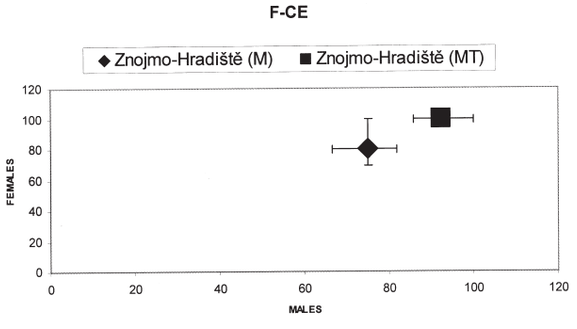
Values of caries intensity I-CE and frequency F-CE according to the *sex* in both samples of burial ground Znojmo-Hradiště are included in Tab. 7 and Tab. 8. The caries intensity was 25.6 by men and 28.6 by women in medieval sample; in modern time sample were 67.3 by men and 58.2 by women. The caries frequency were 75.0 by men and 81.5 by women in medieval sample, while in modern time sample were these values 94.7 by men and 93.3 by women. In this case it is clear to observe that women in the Middle Age had more decayed teeth than men, while in modern time period it was reversed.

According to age

After dividing these dates according to the age to category of adultus, maturus and senilis *(Tab. 9, Tab. 10)*, it is clear that this increasing is the most obvious by the category of senilis. The cate-



Graph 1. Caries intensity presented in following burial grounds from medieval (M) and modern times (MT) population from Znojmo-Hradiště according to the sex and age.



Graph 2. Caries frequency presented in following burial grounds grounds from medieval (M) and modern times (MT) population from Znojmo-Hradiště according to the sex and age.

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gory of adultus represents in both following samples only a small percentage of decayed teeth and intravital looses, even in the sample of modern time period these values are increasing. If category of adultus does not contribute to these increasing values, there are left only groups of maturus and senilis. The second one of both is responsible for this increase because of a great number of intravital losses of teeth. That is why there is also mentioned (Tab. 11, Graph 1, Graph 2), which present summary of these dates without category of senilis.

Values of both caries intensity (I-CE) and frequency (F-CE) according to the *age* in both samples from the burial ground Znojmo-Hradiště are included in Tab. 9, Tab. 10. The caries intensity differs according to the age (from the point of view of sex and time period) according to χ^2-test (on 5% level of significance).

The caries frequency differs according to the age (from the point of view of sex – males vs. females (medieval population: p=0.18842823); (modern times population: p=0.359712569)) according to χ^2-test (on 5% level of significance) in both samples, i.e. are statistically significant on 5% level of significance. As it could be seen, caries intensity and frequency grow with the age are higher by modern times population.

According to dental types

Ordering first lower molars, second lower molars, first upper molars and second upper molars; upper incisors, upper and lower premolars and canines are the most sensitive teeth to the caries [6]. The great difference between these samples *according to the dental types* is more because of a high number of intravital looses by modern time population than cariosity itself. The most decaying teeth were first and second molars and the least decaying was first incisor by medieval sample. Situation is slightly

Tab. 12. Caries intensity presented of following individuals from Znojmo-Hradiště according to the dental types

		I1	**I2**	**C**	**P1**	**P2**	**M1**	**M2**	**M3**
MEDIEVAL	A	142	144	151	147	144	147	144	127
SAMPLE	E	8	9	7	12	29	55	43	53
	%E	5.6	6.3	4.6	8.2	20.1	37.4	29.9	41.8
	Z	88	112	130	123	104	88	96	69
	C	1	4	8	13	7	14	14	7
	%C	1.2	3.6	6.2	10.6	6.7	15.9	14.6	10.1
I-CE	**6.8**	**9.9**	**10.8**	**18.8**	**26.8**	**53.3**	**44.5**	**51.9**	
MODERN	A	112	111	112	110	109	108	99	94
TIMES	E	28	33	27	38	45	75	61	61
SAMPLE	%E	25.0	29.7	24.1	34.5	41.3	69.4	61.6	64.9
	Z	42	48	67	59	55	33	36	32
	C	11	8	12	13	8	7	8	8
	%C	26.2	16.7	17.9	22.0	14.5	21.2	22.2	25.0
	I-CE	**51.2**	**46.4**	**42.0**	**56.5**	**55.8**	**90.6**	**83.8**	**89.9**

Tab. 13. Caries intensity of following individuals from medieval population from Znojmo-Hradiště according to the dental quadrants

FIRST QUADRANT – RIGHT MAXILLA									SECOND QUADRANT – LEFT MAXILLA							
A	25	31	34	35	33	35	32	32	34	34	35	34	33	32	32	29
E	11	9	12	10	2	3	3	3	1	2	3	5	7	14	13	13
%E	44.0	29.0	35.3	28.6	6.1	8.6	9.4	9.4	2.9	5.9	8.6	14.7	21.2	43.8	40.6	44.8
Z	13	22	19	22	30	30	23	16	20	23	31	27	23	18	19	14
C	0	4	5	0	7	2	2	1	0	0	3	4	2	0	2	0
%C	0.0	18.2	26.3	0.0	23.3	6.7	8.7	6.3	0.0	0.0	9.7	14.8	8.7	0.0	10.5	0.0
I-CE	**44.0**	**47.2**	**61.6**	**28.6**	**29.4**	**15.3**	**18.1**	**15.7**	**2.9**	**5.9**	**18.3**	**29.5**	**29.9**	**43.8**	**51.1**	**44.8**
M3	**M2**	**M1**	**P2**	**P1**	**C**	**I2**	**I1**	**I1**	**I2**	**C**	**P1**	**P2**	**M1**	**M2**	**M3**	
A	34	40	40	37	38	40	40	38	38	38	41	42	39	41	41	39
E	13	8	15	7	1	0	2	2	2	2	1	4	5	14	13	16
%E	38.2	20.0	37.5	18.9	2.6	0.0	5.0	9.4	5.3	5.3	2.4	9.5	12.8	34.1	31.7	41.0
Z	21	29	25	28	32	34	36	25	27	30	35	34	31	26	26	21
C	6	4	3	3	1	3	2	0	0	0	0	1	2	6	4	1
%C	28.6	13.8	12.0	10.7	3.1	8.8	5.6	0.0	0.0	0.0	0.0	2.9	6.5	23.1	15.4	4.8
I-CE	**66.8**	**33.8**	**49.5**	**29.6**	**5.7**	**8.8**	**10.6**	**9.4**	**5.3**	**5.3**	**2.4**	**12.4**	**19.3**	**57.2**	**47.1**	**45.8**
FOURTH QUADRANT – RIGHT MANDIBLE									THIRD QUADRANT – LEFT MANDIBLE							

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Tab. 14. Caries intensity of following individuals from modern times population from Znojmo-Hradiště according to the dental quadrants

FIRST QUADRANT – RIGHT MAXILLA										SECOND QUADRANT – LEFT MAXILLA						
A	22	23	25	26	25	25	24	24	27	27	26	26	24	24	22	20
E	14	14	18	12	10	9	11	7	7	11	9	12	8	16	9	13
%E	63.6	60.9	72.0	46.2	40.0	36.0	45.9	29.2	25.9	40.7	34.6	46.2	33.3	66.7	40.9	65.0
Z	7	8	7	12	11	13	5	9	9	10	12	13	14	8	12	7
C	3	2	1	2	5	1	2	4	4	1	3	2	2	3	2	0
%C	42.9	25.0	14.3	16.7	45.5	7.7	40.0	44.4	44.4	10.0	25.0	15.4	14.3	37.5	16.7	0.0
I-CE	**106.5**	**85.9**	**86.3**	**62.9**	**85.5**	**43.7**	**85.9**	**73.6**	**70.3**	**50.7**	**59.6**	**61.6**	**47.6**	**104.2**	**57.6**	**65.0**
	M3	**M2**	**M1**	**P2**	**P1**	**C**	**I2**	**I1**	**I1**	**I2**	**C**	**P1**	**P2**	**M1**	**M2**	**M3**
A	26	27	29	29	29	30	30	31	30	30	31	30	30	30	27	26
E	17	19	20	11	7	4	5	7	7	6	5	9	14	21	19	17
%E	65.4	70.4	69.0	37.9	24.1	13.3	16.7	22.6	23.3	20.0	16.1	30.0	46.7	70.0	70.4	65.4
Z	9	8	9	15	18	20	18	13	11	15	22	17	14	9	8	9
C	4	2	1	2	4	5	4	1	2	1	3	2	2	2	2	1
%C	44.4	25.0	11.1	13.3	22.2	25.0	22.2	7.7	18.2	6.6	13.6	11.8	14.3	22.2	25.0	11.1
I-CE	**109.8**	**95.4**	**80.1**	**51.2**	**46.3**	**38.3**	**38.9**	**30.3**	**41.5**	**26.6**	**29.7**	**41.8**	**61.0**	**92.2**	**95.4**	**76.5**
FOURTH QUADRANT – RIGHT MANDIBLE										THIRD QUADRANT – LEFT MANDIBLE						

different from foregoing by modern time population. In general it is possibly to infer that anterior teeth (incisors and canines) are less decayed than posterior teeth (premolars and molars). In this case it is also necessary to point out little number of examined individuals from modern time sample. The statement about the canines as the least decayed teeth was confirmed only by modern times samples from Znojmo-Hradiště (Tab. 12).

The greatest value of caries intensity *according to the dental quadrants* (Tab. 13, Tab. 14) presents the fourth quadrant, ec. right mandible because of its third molar caries intensity 66.8 by medieval sample and 109.8 by modern time sample. This occurence is possibly to interpret because of high number of intravital looses of third molars. It was imposible to evalued if these teeth were in jaws during life of each individual or even they were never presented. The second greatest value of caries intensity according to the dental quadrants presents first molars by both followed samples, which are generally the most presented caries teeth [6].

After dividing these four quadrants into individual sides, there were possible to evaluate more particularised dates. The greatest value of caries intensity *according to the laterality* presents Tab. 15 – Tab. 18. From all these tables were calculated mean values of maxillas, mandibles, right and left sides; and the conclusion is that in both samples from Znojmo-Hradiště there were more decayed teeth from maxillas and from the right side.

More precise dates offer statistical evaluations. The hypothesis was tested that caries intensity does not differ from followed burial grounds. On 5% level of significance of Pearson

Tab. 15. Caries intensity of following individuals from medieval population from Znojmo-Hradiště according to the upper and lower jaw

MAXILLA								
A	66	66	70	67	68	66	63	54
E	4	5	6	7	17	26	22	24
%E	6.1	7.6	8.6	10.4	25.0	39.4	34.9	44.4
Z	36	46	61	57	45	37	41	27
C	1	2	5	11	2	5	6	0
%C	2.8	4.3	8.2	19.3	4.4	13.5	14.6	0.0
I-CE	**8.9**	**11.9**	**16.8**	**29.7**	**29.4**	**52.9**	**49.5**	**44.4**
I1	I2	C	P1	P2	M1	M2	M3	
A	76	78	81	80	76	81	81	73
E	4	4	1	5	12	29	21	29
%E	5.3	5.1	1.2	6.3	15.8	35.8	25.9	39.7
Z	52	66	69	66	59	51	55	42
C	0	2	3	2	5	9	8	7
%C	0.0	3.0	4.3	3.0	8.5	17.6	14.5	16.7
I-CE	**5.3**	**8.1**	**5.5**	**9.3**	**24.3**	**53.4**	**40.4**	**56.4**
MANDIBLE								

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Tab. 16. Caries intensity of following individuals from medieval population from Znojmo-Hradiště according to the laterality

RIGHT SIDE								
A	70	72	75	71	72	74	71	59
E	5	5	3	3	17	27	17	24
%E	7.1	6.9	4.0	4.2	23.6	36.5	23.9	40.7
Z	41	59	64	62	50	44	51	34
C	1	4	5	8	3	8	8	6
%C	2.4	6.8	7.8	12.9	6.0	18.2	15.7	17.6
I-CE	**9.5**	**13.7**	**11.8**	**17.1**	**29.6**	**54.7**	**39.6**	**58.3**
	I1	I2	C	P1	P2	M1	M2	M3
A	72	72	76	76	72	73	73	68
E	3	4	4	9	12	28	26	29
%E	4.2	5.6	5.3	11.8	16.7	38.4	35.6	42.6
Z	47	53	66	61	54	44	45	35
C	0	0	3	5	4	6	6	1
%C	0.0	0.0	4.5	8.2	7.4	13.6	13.3	2.9
I-CE	**4.2**	**5.6**	**9.8**	**20.0**	**24.1**	**52.0**	**48.9**	**45.5**
LEFT SIDE								

Tab. 17. Caries intensity of following individuals from modern time population from Znojmo-Hradiště according to the upper and lower jaw

MAXILLA								
A	51	51	51	51	50	49	45	42
E	14	22	18	22	20	34	23	27
%E	27.5	43.1	35.3	43.1	40.0	69.4	51.1	64.3
Z	18	15	25	24	26	15	20	14
C	8	3	4	7	4	4	4	3
%C	44.4	20.0	16.0	29.2	15.4	26.7	20.0	21.4
I-CE	**71.9**	**63.1**	**51.3**	**72.3**	**55.4**	**96.1**	**71.1**	**85.7**
	I1	I2	C	P1	P2	M1	M2	M3
A	61	60	61	59	59	59	54	52
E	14	11	9	16	25	41	38	34
%E	23.0	18.3	14.8	27.1	42.4	69.5	70.4	65.4
Z	24	33	42	35	29	18	16	18
C	3	5	8	6	4	3	4	5
%C	12.5	15.2	19.0	17.1	13.8	16.7	25.0	27.8
I-CE	**35.5**	**33.5**	**33.8**	**44.2**	**56.2**	**86.2**	**95.4**	**93.2**
MANDIBLE								

Tab. 18. Caries intensity of following individuals from modern times population from Znojmo-Hradiště according to the laterality

RIGHT SIDE								
A	55	54	55	54	55	54	50	48
E	14	16	13	17	23	38	33	31
%E	25.5	29.6	23.6	31.5	41.8	70.4	66.0	64.6
Z	22	23	33	29	27	16	16	16
C	5	6	6	9	4	2	4	7
%C	22.7	26.1	18.2	31.0	14.8	12.5	25.0	43.8
I-CE	**48.2**	**55.7**	**41.8**	**62.5**	**56.6**	**82.9**	**91.0**	**108.4**
	I1	I2	C	P1	P2	M1	M2	M3
A	57	57	57	56	54	54	49	46
E	14	17	14	21	22	37	28	30
%E	24.6	29.8	24.6	37.5	40.7	68.5	57.1	65.2
Z	20	25	34	30	28	17	20	16
C	6	2	6	4	4	5	4	1
%C	30.0	8.0	17.6	13.3	14.3	29.4	20.0	6.3
I-CE	**54.6**	**37.8**	**42.2**	**50.8**	**55.0**	**97.9**	**77.1**	**71.5**
LEFT SIDE								

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χ^2-test the statistically significant difference was not found out according to the dental types. On 5% level of significance of Pearson χ^2-test the statistically significant difference was found out according to the laterality. In medieval sample differ left side from right side (p=0.000504125). In modern time sample was no statistically difference found out.

CONCLUSION

However, a number of decayed teeth or teeth which were lost during life of people examined were higher by modern time populations from Znojmo-Hradiště, possibly conclusiones are inferred only with a great deal of reticence. A comparison of populations having lived probably in different living conditions but in the same locality has been performed. The dental caries status could reflect many constitutional, genetic, nutritional factors and oral hygiene of followed populations. Both sex and age factors must be included. Complex interactions of all these factors resulted in the different caries frequency.

1. According to the time period were values of caries intensity and frequency in Znojmo-Hradiště lower by medieval population.

2. According to the sex medieval women had slightly more decayed teeth than men, while in modern time period it was reversed.

3. According to the age growth caries intensity and frequency with the age is higher by modern times population.

4. According to the dental types were the most decaying teeth first and second molars in both samples from Znojmo-Hradiště. There were more decayed teeth from maxillas and from the right side by both followed samples.

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RNDr. Ivana Jarošová
Ústav antropologie
Přírodovědecká fakulta MU v Brně
Vinařská 5
603 00 Brno
e-mail: ivanajar@sci.muni.cz