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Dental health of the historical adult population of Tver (12th-18th centuries, European Russia): Report 1*

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Abstract

This is the first article of the series with the analysis of all known to-date data on the dental health of the historical adult population of Tver (11th-18th centuries, European Russia). Report 1 covers the temporal and gender-related aspects of caries and the lack of wisdom teeth.

Keywords: Dental health; caries; European Russia; wisdom teeth

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Introduction

Despite the beginning of the systematic archaeological excavations in Tver (Figure 1) in 1934-1937, it was not until excavations of 1995-1996 when human bones were not only collected but also analyzed and published (1). Further excavations in four districts (Old Russian – posads) (Figure 2) of Tver brought a wealth of human osteological data. In addition to the rich material from Zagorodsky Posad (2-4), data from Zatveretsky Posad (5) and Tver Kremlin (stronghold) (6-8) have been obtained (Table 1). Most of the mentioned publications include short paragraphs on the dental health of the analyzed period's population. However, none of them is specifically addressed to this subject. As the odontological data have been routinely recorded during studies, it is possible to treat it separately in a number of publications. The first article in the row is addressed to the question of the temporal and gender-related aspects of caries in Tver population of the extensive period time from the 11th to 18th centuries. It also touches the subject of the lack of wisdom teeth in some individuals.



Figure 1. Map showing the position of cities, mentioned in the article.

Materials and Methods

Table 1 shows the number of adult individuals (19+), teeth of which were used for the analysis of dental health of the historical Tver population. Aside from the name of historical districts (posads) of the city, the table provides the gender-related percentage of individuals with carious teeth in relation to the entire collection. Grey bars that show the time span of the cemetery researched are filled with white number

that indicate the percentage of individuals with carious teeth from a specific gender group. The lack of M3 or wisdom tooth/teeth is reported as the percentage from the number of individuals of a specific gender-group. A dash indicates the lack of information. Analysis of antemortem tooth loss, abscesses, calculus, alveolar resorption, and tooth are omitted, as they are subjects of the following reports of the series.

Results

53,9% of individuals from the earliest studied cemetery of Tver, located in Tver Kremlin, had signs of caries. The caries distribution shows gender-related dimorphism; women are affected more often than men (6). The percentage of caries is similar with corresponding data from contemporaneous cemeteries of some other medieval Russian cities, such as Lubech (49,4%), Vitichev (51.5%), Old Ryazan (62,7%), Smolensk (50,8%) 9) and Kiev (around 50%) (10). This is in contrast with the population of some other medieval Russian cities, such as Vladimir, Suzdal, Rostov the Great (8), where the percentage of caries is significantly lower (around 15%). Keeping in mind populational genetics as a possible explanation of this high rate of caries in Tver and other mentioned cities, it is reasonable to notice that the high percentage of caries can also be diet-related. People living in status places, such as strongholds, including Tver Kremlin, might have more of then expensive simple sugars in a diet. This thesis is supported by the data on later extra-Kremlin medieval cemeteries of Tver (Table 1), which show a lower percentage of caries. Only cemeteries of the newer times (18-19th centuries), when simple sugars became accessible to the majority of the city population, show a similar or even higher percentage of caries (Table 1).

Zat'matsky Posad cemetery of the 15-17th centuries yields less percentage of caries than an earlier cemetery in Kremlin. As it was mentioned above, this is probably because the diet of ordinary people included less of simple sugars, which usually trigger the carious processes (1). This is also true for the largely contemporaneous cemeteries of Zagorodsky Posad (1,2,4). Interestingly, that the 18th-century material from the cemetery of Zagorodsky Posad shows a lower percentage of caries, which is in contradiction with general tendency of increasing the percentage of caries to modern days with abundance of simple sugars. This can be explained by the small amount of material from this cemetery comparing to other places studied.

Table 1. Some dental characteristics of Tver population of 12-19th cent. AD; Gray bars show the timespan of buried; values inside indicate percentage of the caries within the gender group.

century location-% of caries/sex (n)		12	13	14	15	16	17	18	19	Lack of M3	Source
Tver Kremlin - 53,9%	m (84)	40,3%								-	4
	f (75)	67,5%								-	
Zat'matsky Posad - 46,1%	m (88)				34,1%					0,1%	14
	f (44)				58,1%					1,2%	
Zagorodsky Posad - 44,1%	m (300)					39,0%				0,4%	14
	f (175)					46,2%				1,8%	
Zagorodsky Posad - 50,1%	m (50)				35,1%					0,0%	10
	f (37)				65,0%					0,0%	
Zagorodsky Posad - 35,4%	m (12)							23,1%		16,0%	7
	f (2)							47,7%		0,0%	
Zagorodsky Posad - 38,4%	m (38)			34,4%						2,6%	8
	f (16)			42,4%						0,0%	
Zagorodsky Posad - 68,0%	m (13)								60,0%	0,0%	11
	f (14)								76,0%	0,0%	
Zatveretsky Posad - 64,7%	m (33)					45,2%				0,0%	12
	f (25)					83,5%				4,0%	



Figure 2. Fragment of the map of Tver from the City Guide of 1905, showing Kremlin (stronghold) (red outlines) and posads (districts): I – Zavolzhsy; II – Zatvetertsy; III – Zagorodsky; IV – Zat'matsky.



Figure 3. Lower jaw of 45-55-years old woman showing signs of caries and tartar (M1sin and M3sin are altogether lost due to the caries). Zagorodsky Posad, 19th century.

This statement is supported by the material of 19th-century from Zagorodsky Posad (11) (Figure 3), where the percentage of caries was the highest among studied cemeteries. The cemetery of Zatveretsky Posad does not break the mentioned tendency. Reaching the end of the 18th century the cemetery yields a high percentage of caries, especially in women population (5).

Teeth that are mostly affected by the caries are similar between the cemeteries. Most of the carious teeth belong to the group of two last premolars and the first molar of both jaws.

The absence of third molars altogether or some of them is not a rare case in the human population. Although this trait affects more frequently women due to the gender-related shortness of the facial skeleton of their skulls (12-14), some of the cemeteries show the opposite; the prevalence of men with wisdom teeth lacking, Table 1: Zagorodsky Posad (3,4).

Conclusion

I made the first attempt to analyze the data on the dental health of the historical Tver population. All the groups ranging from the 12th to 19th centuries show high frequency of caries in both men and women. Women are affected more often though. The percentage of caries in both genders increase to the 19th century due to the higher accessibility of simple sugars. A high level of caries is also observed in the earliest cemetery from Tver Kremlin, where high-rank people were buried. Their diet contained a high level of simple sugars than expensive but accessible to the group with high income. Ordinary people from the medieval Tver posads were thus lesser affected by caries. Although the lack of wisdom teeth is generally characteristic for women, some cemetery materials from Tver show the opposite.

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