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**SOME ANATOMIC FACTORS OF GENIAL APERTURES
OF THE LOWER JAW TAKING INTO ACCOUNT SEX
AND AGE OF THE INDIVIDUAL**

Annotation

In this article, on the basis of 27 preparations' analysis, the assessment of the anatomic factors of the genial apertures in consideration of sex and age of individual is given in aspect of osteological identification of the person.

Osteological identification of the person continues to remain one of the most difficult problems of legal medicine [6, 11]. Thus it is necessary to agree with V.Zviagin's [2] opinion that among osteological objects the most informative by the content of signs is skull. Special value in this plan has its facial part including the lower jaw.

The value of identification signs of lower jaw was marked by many authors [1, 7]. The lower jaw has such differences as sexual, age and racial [4]. At the same time the factors of its structure can reflect a number of factors of person's appearance described according to the system of «composite drawing» [5].

The factors of the lower jaw's form are determined by the great number of craniometrical and descriptive (cranioscopical) factors. Among them, in V.Smironov's opinion [8, 9], the most noticeable individual variability has position and form of genial apertures. The analysis of the factors of the given anatomic (bone) formations

in the aspect of osteological identification of the person was the purpose of our research.

The objects of research were 27 lower jaws from corpses of male (19) and female (8) sexes at the age from 20 till 70 years and more. The died were representatives of Russian nationality living in territory of Moscow and the nearest Moscow suburbs. Lower jaws were removed by the medical legal research (examination) of corpses and studied according to the methods accepted in anthropological (craniological) researches. The main analyzed craniometrical factors of genial apertures of the lower jaw are represented in tab. 1.

In our observations the genial aperture was usually at the level of the interval between 1. and 2. premolar teeth, less often under the alveolus of 2. premolar tooth. In the literature cases of displacement of the genial aperture forward - under the alveolus of 1. premolar tooth or back - up to the interval between 2. premolar and 1. molar tooth [3] are described, however we

Table 1

Analyzed craniometrical features of genial apertures of lower jaw

1	Forward width is the distance between internal edges of genial apertures
2	Width of the body's basis at the level of genial apertures
3	Height of the body at the level of genial apertures
4	Thickness of a body at the level of genial apertures
5	Longitudinal diameter of genial aperture
6	Cross-section diameter of genial aperture
7	Distance from internal edge of genial aperture up to the basis of the body
8	Distance from internal edge of genial aperture up to the top edge of the alveolar shoot

had not met such cases. Also in our observation cases with absence of genial aperture were not marked, but there is a mention about it in the book of V.Speranskiy [10].

The distance between internal edges of genial apertures (forward width) varied from 38,0 up to 48,0 mm in our researches. On the average the given parameter by men was $42,57 \pm 1,13$ mm, by women $42,85 \pm 2,54$ mm ($t = 0,23$). The mean value of the given factor was characterized by the small difference in three age groups: till 40 years - $41,00 \pm 2,26$ mm, till 60 years - $41,20 \pm 1,39$ mm, from 60 years and older - $43,85 \pm 1,45$ mm. However the correlation analysis between the given factors revealed the moderate correlation dependence (tab. 2).

The size of width of the body's basis at the level of genial apertures changed from 44,1 up to 62,0 mm. By men this parameter was on the average $54,16 \pm 1,72$ mm, by women - $54,31 \pm 3,43$ mm ($t = 0,09$). Also the given factor differed a little in different age groups, accordingly $54,07 \pm 3,69$ mm, $54,86 \pm 2,59$ mm and $53,84 \pm 2,28$ mm (the "t" criterion between corresponding pairs was not higher than 2). The correlation analysis of the given factor with sex and age did not reveal the correlation connection.

The height of the body's basis at a level

of genial apertures changed from 14,2 up to 37,2 mm. As against the above mentioned factor the given parameter was characterized by some sexual and age factors. On the average the size of this parameter was $28,18 \pm 1,69$ mm by men and $25,31 \pm 3,85$ mm by women ($t = 1,57$). By the estimation of correlation dependence of the given parameter taking into account sex was determined the moderate correlation connection ($r = 0,3$).

The average indicator of the height of the body's basis at the level of genial apertures in the age group till 40 years was $29,68 \pm 3,08$ mm, in group till 60 years - $29,63 \pm 2,43$ mm and in group from 60 years and older - $25,47 \pm 2,24$ mm (the "t" criterion at comparison of average between 1 and 3 groups, and also at comparison of average of 2 and 3 groups was higher than 2,5). The correlation analysis of the given parameter taking into account age revealed negative moderate interconnection ($r = -0,43$).

The parameter of body's thickness at the level of genial apertures varied from 8,9 up to 16,4 mm. By men the average size of it was $11,90 \pm 0,76$ mm, by women - $11,27 \pm 0,93$ mm ($t = 0,93$). The given factor also differed only a little in different age groups, accordingly $11,15 \pm 0,99$ mm, $11,78 \pm 1,30$ mm and $11,78 \pm 0,76$ mm (the

¹ Hereinafter $p < 0,05$

Characteristic of correlation connection between craniometrical features of genial apertures taking into account sex and age

<i>Craniometrical features of genial apertures</i>	<i>Sex</i>	<i>Age</i>
Forward width	-0,05	0,45
Width of the body's basis at the level of genial apertures	-0,02	-0,07
Height of the body at the level of genial apertures	0,30	-0,43
Thickness of a body at the level of genial apertures	0,18	0,09
Longitudinal diameter of genial aperture	0,03	0,15
Cross-section diameter of genial aperture	0,11	0,15
Distance from internal edge of genial aperture up to the basis of the body	0,25	-0,14
Distance from internal edge of genial aperture up to the top edge of the alveolar shoot	0,05	-0,42

“t” criterion between all corresponding pairs was not higher than 1,5). The research of correlation connections of the given factor including sex and age did not reveal any dependences.

As J.Gladilin marks [3], the form of the genial aperture of the lower jaw in 86 % of cases is oval, in the others - round. The size of the aperture horizontal is 1-6 mm, vertical - 1-4 mm; in 54,5 % of cases the sizes of the aperture are not the same on both sides.

According to our data, the longitudinal axis of genial aperture's diameter changed from 2,4 up to 4,9 mm, and across of diameter - from 1,7 up to 4,5 mm. The average results of these factors have made $3,71 \pm 0,33$ mm by men and $2,90 \pm 1,13$ mm, by women $3,66 \pm 0,36$ mm and $2,40 \pm 0,23$ mm ($t = 0,17$ and $t = 0,49$).

The given factors were not various in different age groups. The average results of the longitudinal axis of the aperture's diameter in age group till 40 years was $3,32 \pm 0,46$ mm, in group till 60 years - $3,74 \pm 0,42$ mm and in group from 60 years and older - $3,73 \pm 0,37$ mm. The average results of across of aperture's diameter in three age groups was accordingly $2,40 \pm 0,15$ mm, $2,35 \pm 0,39$ mm and $3,06 \pm 1,42$ mm (the “t” criterion between the corresponding pairs was not higher than 2). By the correlation analysis of

these factors including sex and age there wasn't marked any important connection.

As concerns the forms of genial apertures, their matching on both sides took place only in 2/3 cases, thus in 90,0 % the genial aperture had the form of an oval and in 10,0 % - a circle. In 1/3 of cases the form of genial aperture on both sides of the lower jaw was different. In these cases on the left side prevailed the round form of genial aperture (71,4 %), and on the right side - the oval (28,6 %).

It is necessary to notice that there was no conformity of sizes of the longitudinal and cross-section sizes in our observation. In 1/5 of cases there was the conformity of the longitudinal sizes. The same frequency is marked in concurrence of the cross-section sizes.

According to the V.Speransky's data [10] the distance between genial aperture and the lower edge of jaw is 10-18 mm by adults. After the loss of teeth this distance changes a little and the distance from the aperture to the top edge of the jaw decreases considerably; at a full atrophy of an alveolar shoot the genial aperture can be on the top surface of the jaw's body.

These data have found almost completely confirmation in our researches. The distance between genial aperture and basis of the lower jaw changed from 10,55 up to 18,25 mm (on the

average by men was $14,06 \pm 0,74$ mm, by women $13,11 \pm 1,32$ mm; accordingly $t = 1,31$ and $t = 0,26$) whereas the distance from an aperture up to the top edge of the alveolar shoot varied from 1,8 up to 20,8 mm (on the average by men was $12,87 \pm 1,50$ mm and by women - $12,45 \pm 3,33$ mm). Thus if the average size of the first parameter in three age groups did not change (it was accordingly $14,05 \pm 1,96$ mm, $14,08 \pm 1,37$ mm and $13,54 \pm 0,81$ mm) the average size of the second factor differed noticeable in each group. In group till 40 years it was $15,48 \pm 1,94$ mm, in group till 60 years - $14,07 \pm 2,21$ mm, in group from 60 years and older - $11,40 \pm 1,91$ mm. At comparison of average between 1 and 2 groups and between 2 and 3 groups t was 2,5, at comparison of average between 1 and 3 groups t was 2,9. The correlation analysis of the given parameter including age has revealed negative moderate correlation connection ($g = -0,43$).

Thus, position and form of genial apertures are characterized by significant variability of anatomic factors, and the certain connection of some features of the given anatomic formations taking into account sex and age makes it possible (by special researches) to use them alongside with other features for the purposes of identification of the person.

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