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DETERMINATION OF THE ASYMMETRY OF THE LATERAL VIEW IN DIFFERENT FORMS OF THE SKULL.

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Key words: *asymmetry, craniometry, shapes of the facial part of the skull, fan method.*

Introduction. In modern times, the activities of plastic and maxillofacial surgeons are aimed at early eradication of deformities, defects, and disproportions [4]. Successful diagnostic examinations in the maxillofacial region and the selection of adequate treatment methods depend on the accuracy of the data on the regularity of the bone marrow localization of this region [8]. However, in recent morphological studies, only evidence of facial features, structural features, developmental defects of the skeleton is found [2]. In these studies, the asymmetry of the facial section of the skull was not taken into account.

Changes in the soft tissues of the face as well as in the skull bones cause asymmetry. Although numerous studies are currently devoted to the asymmetries in the soft tissues of the face [6], asymmetry in the bone structures of different shaped skulls has not been studied.

Materials and methods of research. The skulls from the craniological collection of the Museum of Human Anatomy and Medical Terminology of the Azerbaijan Medical University were used during the research. The skulls were deported (known by age and sex), with no deformities, no visible damage, and different ages of extraterrestrial development. Asymmetry was researched in craniometric parameters of 120 human

skulls. The research used the classical method of craniometry and the modern “Fan” method.

Based on the classic craniometric method, the following craniometric points were used to determine the size of the skull (Martin R., 1928) [9]:

1. Nasion (nasion) – connecting point of nasofrontal and internasal sutures.
2. Zygion (zygion) – farthest points of zygomatic bones;
3. Gnathion (gnathion) – the most anterior convex point of the body of mandible;
4. Prosthion (prosthion) – the most prominent point between central incisors of the alveolar process of the maxillary bones (fig. 1).

Using the indicated points, the width of the skull (the distance between the both zygion point of the skull), the morphological height (the distance between the nasion and the gnathion), and the upper facial height (the distance between the nasion and the prosthion) were measured.

To determine the shape of the skull, the upper face index was determined based on the measurements mentioned.

The upper face index is calculated as the relation of distance between nasion and prosthion to the zygomatic diameter (distance between both zygion points). According to R. Martini's (1928) classification, there are three types of skulls

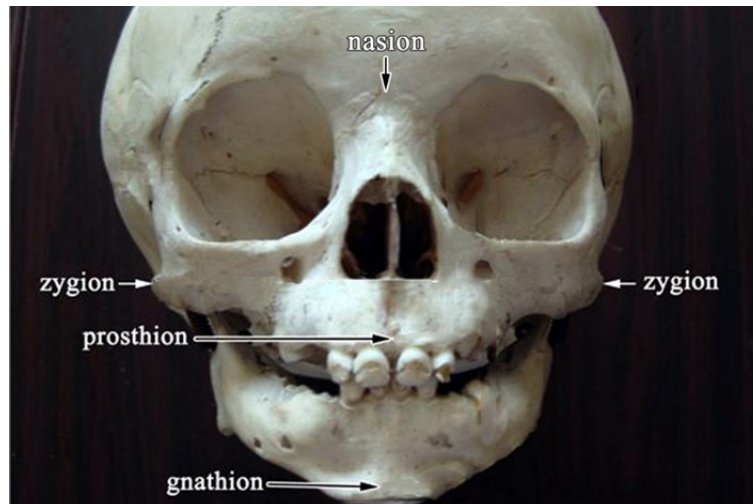


Fig. 1. Craniometric pointes of the facial skull

On the upper face index, the "Fan" craniometric method was used to determine the asymmetry in the face skull [5]. According to this method, three craniometric points are used in the facial section of the skull: 1. Nasion (N) - connecting point of nasofrontal and internasal sutures; 2. Prosthion (Pr) - the most prominent point between central incisors of the alveolar process of the maxillary bones; 3. Zygion (Zyg) - farthest points of zygomatic bones;

Starting from this point and ending at the surrounding craniometric points. The face skull is divided into upper, lower, and lateral "fan" (images). The "lateral fan" consists of the distances between Zygion (Zg) with nasion (N), lateral margin of the aperture piriformis (Pl), the infraorbital foramen (Fio), prosthion (Pr), gnathion (Gn), gonion (Gon) (fig. 2).

Following the general regulations for medical and biological research, the figures of our research were statistically analysed.

The figures were calculated using variational statistics on PC / AT "Pentium-IV" using Statistical (StatSoft, 1999) and Microsoft Excel Windows-7 software packages. The minimum (min) and maximum (max) values, the average mathematical price ($M \pm m$), the variance coefficient (VC%), the

reliability index (RI), the upper (UB) and the lower boundary (LB), are defined [10].

Research results and their discussion.

The first and foremost research identified the shape of the skull. For this purpose, the upper height and width of the skull were measured and the upper face index was calculated. The results of our measurements showed that superior facial height 41,0-82,0mm, on average $61,1 \pm 0,9$ mm (RI – 59,3-62,9%, VC – 16,1%), width of the facial skull 84,0-128,3mm, on average $111,4 \pm 1,3$ mm (RI – 108,8-114,0%, VC – 12,8%), superior facial index 48,9-63,4mm, on average $54,8 \pm 1,1$ (RI – 52,6-57,0%, VC – 22,0%) was. (Table 1).

The skulls studied in the research were subdivided into the upper face index. It was clarified how many percentages of facial forms occur. The distribution of the investigated material showed that the long face (lepten, upper face index more than 55) had 44 skulls, the middle face (mesen, upper face index 50 to 55) with 58 skulls, and the broad face (euryen, upper face). index (less than 50) was observed in 18 skulls (table 2)..

To determine the asymmetry in the different forms of the skull, measurements were made on the "lateral fan" in male and female skulls (table 3) Almost half of the researched material ($48,3 \pm 4,6\%$) was made of

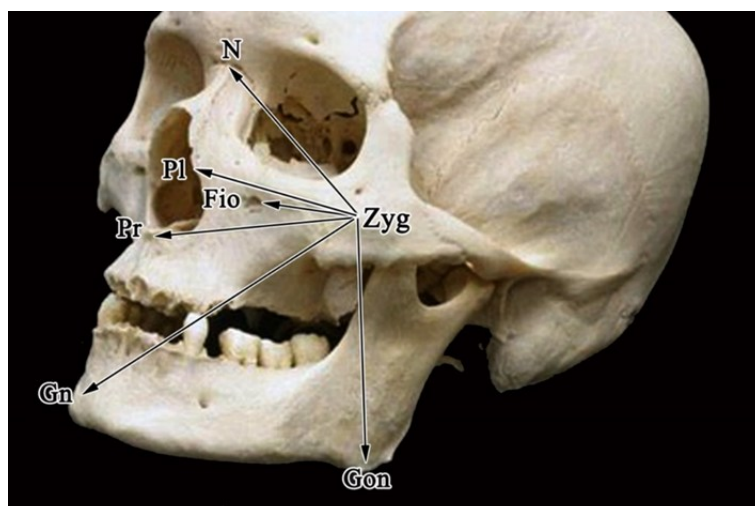


Fig. 2 “Lateral fan” distances

Table 1
Craniometric parameters of the face part of the skull

Cranimetric parameters	Statistic parameters			
	n	M±m (min – max)	95% RI: UB – LB	VC,%
Superior facial height (mm)	120	61,1±0,9 (41,0 – 82,0)	59,3-62,9	16,1
Width of the facial skull (mm)	120	111,4±1,3 (84,0 – 128,3)	108,8-114,0	12,8
Superior facial index	120	54,8±1,1 (48,9 – 63,4)	52,6-57,0	22,0

Note: 1. n – number of skulls; 2. M±m - the average mathematical price; 3. min – minimal, vø max – maksimal price; 4. VC% – variance coefficient, RI – reliability index (UB – upper boundary, LB – lower boundary).

Table 2.
Distribution of skulls on the upper face index.

Form of the skull	Number of the skull	Percentace
Lepten	44	36,7±4,4
Mezen	58	48,3±4,6
Euryen	18	15,0±3,3
All	120	100%

Table 3.
Comparison of the measure “lateral fan” different shapes of the male and female skull

№ II/II	Distance (mm)	Investigated part	Statistic index at the different shapes of the skull					
			Eyren	P	Mezen	P	Lepten	P
Female								
1	Zg- Fio	right	24,27±0,6	0,04	26,00±0,5	0,32	25,51±0,4	-0,17
		left	24,23±0,6		25,68±0,5		25,68±0,5	
2	Zg-Pl	right	39,95±0,7	-0,28	41,93±0,7	-0,35	42,96±0,4	0,14
		left	40,23±0,6		42,28±0,7		42,82±0,5	
3	Zg-Gn	right	49,36±0,4	0,13	52,33±0,9	-0,01	52,18±0,9	-0,08
		left	49,23±0,7		52,34±1,0		52,36±0,9	
4	Zg-Gon	right	54,82±0,7	-0,04	57,63±0,9	0,29	56,96±0,8	-0,04
		left	54,86±0,5		57,34±1,0		57,00±0,9	
Male								
1	Zg- Fio	right	29,32±0,69	-0,21	26,75±0,57	-0,01	27,79±0,79	-0,64
		left	29,41±0,78		26,76±0,68		28,43±0,62	
2	Zg-Pl	right	46,43±1,00	-0,19	44,47±0,57	0,73	44,68±0,65	-0,56
		left	46,62±1,01		43,74±0,63		45,24±0,86	
3	Zg-Gn	right	55,49±1,04	-0,22	54,44±0,77	-0,32	54,95±0,77	-1,23
		left	55,71±1,13		54,76±0,72		56,48±0,78	
4	Zg-Gon	right	61,91±1,48	-0,30	60,32±0,99	-0,36	62,54±0,71	-0,33
		left	62,21±1,28		60,68±0,84		61,21±0,83	

number of long size skulls. The study found that regardless of shape, female skulls had the most left-sided asymmetry at the sides of the "lateral fan".

Regardless of the shape in the male skull except distance between zygion (Zg) point and lateral edge of the aperture piriformis (Fl) there is only left side asymmetry is observed all another distance in "lateral fan"

Regardless of the shape of the male skull, except the distance from Zygion (Zg) point to lateral edge of the aperture piriformis (Fl), only the left-sided asymmetry is observed at the "lateral fan".

According to the literature the asymmetry observed in the "lateral fan" may be due to the difference in tone of the

nasal, mastication muscles on the right and left [11].

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XÜLASƏ

KƏLLƏNİN MÜXTƏLİF FORMALARINDA YAN GÖRÜNÜŞDƏ ASİMMETRİYANIN MİQƏYYƏN EDİLMƏSİ

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Tədqiqat işin məqsədi müxtəlif formalı üz kəllələrində, yan görünüşdə asimetriyanın təzahür dərəcəsini öyrənmək olmuşdur.

Tədqiqatda deformasiya və zədələr müşahidə edilməyən, insanın bətnxarici inkişafın müxtəlif yaş dövrlərinə aid olan, 120 insan kəlləsinin kraniometrik göstəricilərində asimetriya əlamətləri öyrənilmişdir. Tədqiqatda kraniometriyanın klassik üsulundan və müasir “Yelpik” üsulundan istifadə edilmişdir.

Tədqiqatın nəticələri göstərmişdir ki, formasından asılı olmayaraq qadın kəllələrində “Yan yelpik”-in məsafələrində ən çox soltərəfli asimetriya müşahidə olunur. Orta üzlü qadın kəllələrində həm soltərəfli asimetriyanın minimal (-0,01) və maksimal (-0,35) qiymətləri, həm də sağtərəfli asimetriyanın minimal (0,04) və maksimal (0,32) qiymətləri ölçülmüşdür. Formasından asılı olmayaraq kişi kəllələrində zigion ilə armudu dəliyin bayır kənarı (Fl) nöqtəsinə qədər olan məsafədən başqa “Yan yelpik”-in məsafələrində ancaq soltərəfli asimetriya müşahidə edilir. Soltərəfli asimetriyanın minimal qiyməti (-0,01) orta üzlü, maksimal qiyməti (-0,64) isə uzun üzlü kişi kəllələrində müşahidə edilmişdir.

Açar sözlər: *asimetriya, kraniometriya, kəllənin üz hissəsinin formaları, yelpik üsulu.*

РЕЗЮМЕ

ОПРЕДЕЛЕНИЕ АСИММЕТРИИ В БОКОВОМ ВЕЕРА ПРИ РАЗЛИЧНЫХ ФОРМАХ ЧЕРЕПА.

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Цель исследования:- выявить асимметрии в разных формах и боковом виде (сбоку) лицевого черепа.

В исследовании было использовано 120 человеческих черепов (черепов без деформаций, без видимых признаков травм и разного возраста), В ходе исследования использовался классический метод краниометрии и современный метод «Веер».

Результаты исследования, показали, что независимо от формы, женские черепа имеют наибольшую левостороннюю асимметрию в «боковом веере». Среднее значение левосторонней асимметрии (-0,01) и максимальное значение (-0,35), а также минимальное значение правосторонней асимметрии (0,04) и максимальное (0,32) наблюдались в среднелицевых формах женского черепа.

Независимо от формы мужского черепа, за исключением расстояния между зигионом (Zg) и латеральным краем артура piriformis (Fl), в «боковом веере» наблюдается только левосторонняя асимметрия. Минимальное значение левосторонней асимметрии (-0,01) отмечено в среднелицевом черепе, а максимальное значение (-0,64) - в длиннوليцевом мужском черепе..

Ключевые слова: *асимметрия, краниометрия, формы лицевого отдела черепа, веерный метод.*