Внедрение данной разработки позволит ввести мониторинг и оценку факторов риска развития неинфекционных заболеваний и перечня обоснованных диагностических обследований, является основой для планирования необходимых объемов профилактических вмешательств. Широкое использование возможностей медицинской информационной системы позволит принимать обоснованные управленческие решения, проводить их анализ и рационально использовать ресурсы учреждения здравоохранения.

Ключевые слова: медицинская информационная система, профилактические медицинские осмотры, анамнестические анкеты, мониторинг и оценка, управление профилактикой.

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this development will allow introducing monitoring and evaluation of risk factors for the development of noncommunicable diseases and a list of justified diagnostic examinations, is the basis for planning the necessary volumes of preventive interventions. Wide use of the capabilities of the medical information system will allow making informed management decisions, conducting their analysis and rationally using the resources of the health care institution.

Key words: medical information system, preventive medical examinations, anamnesis questionnaires, monitoring and evaluation, prevention management.

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DETERMINATION OF NORMAL CEPHALOMETRIC PARAMETERS BY J. MCNAMARA METHOD FOR UKRAINIAN BOYS AND GIRLS

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The article presents the cephalometric parameters used in cephalometric analysis by the J. McNamara method in boys and girls of Podillia region of Ukraine with orthognathic occlusion, evaluation of sexual differences of these parameters (in boys established significantly higher values of most indicators that characterize the ratio between the upper and lower jaw, and in girls - only a basic angle) and a comparison of the results with the data received by J. McNamara. It is shown that almost half of the cephalometric parameters obtained in Podillia boys and girls with orthognathic bite have distinct differences with the magnitude of these parameters obtained by J. McNamara

Key words: lateral teleroentgenograms of the head, cephalometry, boys, girls, McNamara analysis.

With the introduction in 1934 by Hofrath in Germany and Broadbent in the USA X-ray cephalometry, a clinical tool for the study of occlusion anomalies and skeletal imbalances appeared in the hands of scientists. A cephalometric study is one of the objective diagnostic tools that help in determining the diagnosis and drawing up a treatment plan. One of the most popular latest diagnostic methods that have been proposed is the McNamara analysis [12]. This method was proposed by the American orthodontist James A. McNamara, who received an academic degree in "anatomy" at the University of Michigan. He suggested this analysis since the development of jaw-facial surgery required the diagnostic method that can be sensitive not only to determine the position of the teeth within the bone, but also to determine the ratio of maxillary and cranial structures, and to determine the norm taking into account human growth processes. Since then, the method has become very popular and widespread. So according to a study conducted in 2008 by the Journal of Clinical Orthodontics, this method is used by every tenth orthodontist in the United States [10]. The J.McNamara analysis allows you to match the characteristics of the position of the teeth and jaws to each other, and also with respect to the base of the skull. J.McNamara analysis is a combination of measurements of Ricketts [15] and Harvold [16] and of its own definitions, which make it possible to determine the position of the jaws and teeth more accurately. Namely: in the basis of the method there are two basic planes: Frankfurt and Basal; most linear indicators are used than angular ones; comprehensive analysis of inter-jaw ratio in the vertical and sagittal planes. To determine standards and standards, three groups of people have been analyzed and studied: 1 - side cephalograms of children conforming to Bolton standards; 2 - orthodontically untreated children from the Burlington Research Center; 3 - men and women aged 26-30 years, who had an aesthetic face and a good bite. As a result of the study, the author proposes a separate norm for different ages and sex [9, 12].

The purpose of the study is to establish cephalometric parameters by the J. McNamara method for boys and girls of the Podillia region of Ukraine with orthognathic bite and compare the results with data obtained by James McNamara.

Material and methods. Using the Veraviewepocs 3D device, Morita (Japan) in 38 boys (in age from 17 to 21 years) and 55 girls (aged from 16 to 20 years) with normal occlusion close to orthognathic occlusion, side teleroentgenograms were obtained and analyzed. Cephalometric points and measurements were carried out in accordance with the recommendations of McNamara [12], and the anatomical ones by "Orthodontic Cephalometry" [1] and S.I. Doroshenko and Ye.A. Kulginsky [7].

The following cephalometric points (Figs 1-4) were used to determine the parameters according to the method of J. McNamara: A (subspinale, point A by Downs) - the most posteriorly placed point of the anterior contour of the upper jaw; ANS (spina nazalis anterior, apex of the anterior nasal spine) - forms the anterior point of the palatal plane SpP; Ba (basion) - the lowest point of the anterior edge of the large occipital hole in the middle-sagittal plane; Cond (condylion) - a point on the top of the contour of the head of the mandible; Gn (gnation) - an anterior point on the lower contour of the body of the mandible; Is1L (incision inferior) - the point is located on the cutting edge of the lower median cutter; Is1u (incision superior) - the point is located on the cutting edge of the upper medial cutter; Me (menton) - the lowest point on the symphysis of the mandible; N (nasion) - the most forward point of the frontal nasal seam (joints of the frontal and nasal bones in the medial-arterial plane); Or (orbitale) - the lowest part of the submandibular edge, is located on the eyelid of the caudal bone; PNS (spina nazalis posterior, posterior nasal spine) - the posterior point of the palatine plane SpP; Po (porion) - placed on the upper edge of the external ear canal; Pog (pogonion) - the most forward point of bone chin projection; Pt (pterygomaxillare) - the upper distal point of the wing-maxillary fissure, at the intersection of foramen rotundum with the posterior wall of the wing-maxillary fissure; T2 - the point of contact of the tangent to the lower contour of the lower jaw drawn from the point Me.
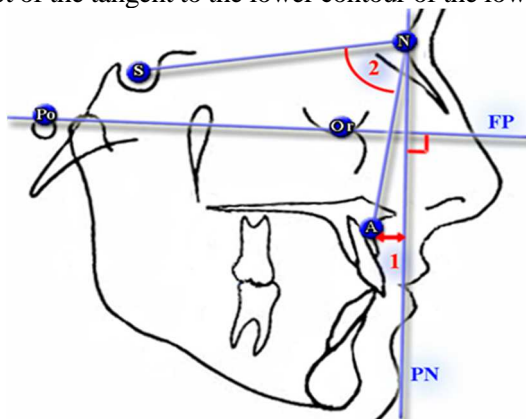

Fig.1 Indicators characterizing the position of the upper jaw in relation to the base of the skull.
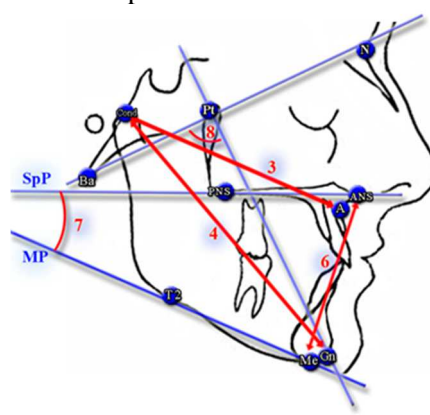

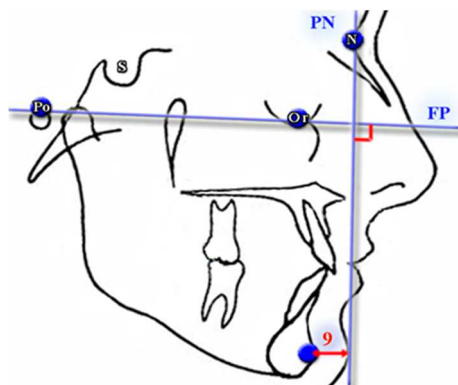Fig. 2. Indicators characterizing the ratio between the upper and lower jaws.

Fig. 3. Indicators characterizing the position of the lower jaw in relation to the base of the skull.
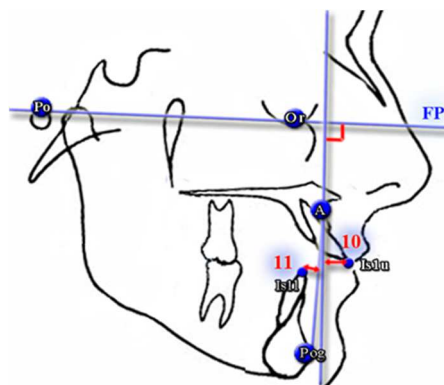

Fig. 4. Indicators characterizing the position of the median cutters of the upper and lower jaws in the sagittal direction.

According to the method of J. McNamara studied the following indicators. Indicators describing the position of the upper jaw in relation to the base of the skull (see Figure 1): (1) distance PN_A - distance from point A to line PN (nose perpendicular - perpendicular line from the point N to the Po-Or line) (if the point A is located distal from the nasal perpendicular PN, then the indicator takes a negative value, and if the medial - then a positive value); (2) the angle SNA - is formed by lines S-N (anterior cranial basis) and N-A.

Indicators characterizing the relationship between the upper and lower jaws (Figure 2): (3) the distance COND_A (effective length of the upper jaw) - the distance from the point Cond to point A; (4) distance COND_Gn (effective length of the lower jaw) - the distance from the point Cond to the point Gn; (5) difference MAX_MAND (maxillar-mandibular difference) - difference between distances Cond-A and Cond-Gn; (6) distance ANS_ME (lower face height) - distance from ANS point to Me point; (7) Angle SpP_GoMe (base angle, angle ML_NL) - is formed by the lines ANS-PNS and T2-Me (the angle between the spinal SpP and mandibular MP planes); (8) angle NBA_PTGN (angle of the front axis) - is formed by lines N-Ba and Pt-Gn (determines the direction of growth of the mandible). Indicators characterizing the position of the lower

jaw in relation to the base of the skull (Figure 3): (9) distance PN_Pog - distance from the point Pog to the nose perpendicular PN (perpendicular to the line from point N to the line Po-Or).

Indicators characterizing the positions of the median cutters of the upper and lower jaws in the sagittal direction (Figure 4): (10) distance 1u_Avert - distance from the point Is1u to the perpendicular to the Frankfurt area (Po-Or) through point A (if the distance is medial, that is, the cutting edge of the cutter is in the front with respect to the line position, then the indicator takes a positive value, and if the distance is distal, that is, the cutter edge of the cutter is in the posterior with respect to the line position, then the figure takes negative value); (11) distance 1l_APog - the distance from the point Is1L to the line A-Pog (if the distance is medial, that is, the cutting edge of the chisel is in the front with respect to the line position, then the indicator takes a positive value, and if the distance is distal, that is, the cutting edge of the cutter is in the posterior with respect to the line position, then the indicator takes a negative value). The statistical processing of the obtained results was carried out in the licensed package "Statistica 6.0" using nonparametric methods for evaluating the obtained results. The reliability of the difference in values between the independent quantitative values was determined using the Man-Whitney U-criterion.

Results and its discussion. The cephalometric parameters by the J.McNamara method (average with standard deviation and percentile scale) in boys and girls of Podillia region of Ukraine with orthognathic bite are presented in Table 1.

Table 1

Cephalometric parameters by McNamara in boys and girls from Podillia region of Ukraine with orthognathic bite

Indicator	Value for McNamara (M±δ) [4]		Boys		Girls		p
	Юнаки	Дівчата	M±δ	25p-l, 75p-l	M±δ	25p-l, 75p-l	
PN-A (mm)	1,1±2,7	0,4±2,3	-0,082±3,961	-1,479 – 1,906	-0,910±3,260	-3,009 – 1,347	>0,05
SNA (°)	83,9±3,2	82,4±3,0	82,32±3,98	79,45 – 84,22	81,48±3,36	79,17 – 83,35	>0,05
COND-A (mm)	99,8±6	91±4,3	85,79±5,02	82,44 – 89,29	79,52±3,81	77,06 – 81,97	<0,001
COND-Gn (mm)	134,3±6,8	120,2±5,3	115,8±5,6	112,0 – 120,3	107,4±4,9	103,9 – 110,5	<0,001
MAX-MAND (mm)	34,5±4,0	29,2±3,3	29,99±3,68	27,98 – 32,60	27,84±3,57	25,78 – 29,56	<0,01
ANS-ME (mm)	74,6±5,0	66,7±4,1	65,16±4,51	61,94 – 68,72	61,35±4,51	58,21 – 63,37	<0,001
SpP-GoMe (°)	21,3±3,9	22,7±4,3	19,84±5,63	15,26 – 22,92	22,35±4,98	18,46 – 25,45	<0,05
NBA-PTGN (°)	90,5±3,5	90,2±3,2	93,47±5,16	90,03 – 96,15	92,89±4,18	90,80 – 95,88	>0,05
PN-Pog (mm)	-0,3±3,8	-1,8±4,5	-1,513±6,220	-6,476 – 2,032	-2,625±5,204	-6,024 – 1,062	>0,05
1u-Avert (mm)	5,3±2,0	5,4±1,7	4,280±1,949	2,886 – 5,717	3,799±2,118	2,381 – 5,398	>0,05
1l-Apog (mm)	2,3±2,1	2,7±1,7	4,889±1,609	4,007 – 5,820	4,553±1,902	3,196 – 5,821	>0,05

Notes: M±δ – middle ± standard deviation; 25p-l, 75p-l – percentile scale.

When comparing the cephalometric parameters used in the J.McNamara analysis between boys and girls of Podillia with orthognathic bite in boys, the values of the effective length of the upper and lower jaw, upper maxillary and lower extremity of the face are significantly higher (p <0,01-0,001); and in girls - significantly greater (p <0,05) value of the basic angle between the spinal and mandibular planes (see Table 1).

It should be noted that despite a detailed and fundamental approach to the establishment of a normative basis for cephalometric values, studies of various ethnic groups indicate that there are significant differences between these indicators. Thus, studies of 44 women and 29 people aged from 19 to 29 years in the Turkish population have established significant differences for the values of most of the cephalometric indicators proposed by J.McNamara [5]. Studies of the Syrian population carried out on 100 individuals with normal occlusion also indicate a significant difference between the majority of indicators used in the J.McNamara method. [4] Similar norms and peculiarities were identified for the inhabitants of southeastern China [11], Iran [14], the ethnic population Marathi [3], Iraq [13], China [17], and the Saudi population [2].

In addition to defining standards for one average age-old ethnic population, studies were conducted on the analysis and character of the change in J.McNamara age-related cephalometric analysis [6, 8].

The results of J.McNamara analysis are very useful and accurate when the obtained cephalometric values for the patient are compared with the established norm for similar ethnic groups, age and sex. Since craniofacial indicators show variations in different peoples, races and populations, normative data should be defined for each racial and ethnic group, based on gender and age. Comparing the cephalometric parameters obtained by J.McNamara [10] with the parameters of these parameters obtained in boys and girls of Podillia with orthognathic bite (see Table 1), the expressed differences of the following indices are established: lower values in young boys and girls from Podillia are the effective length of the upper and lower jaw, the lower height of the face, and only in the young men, the upper-mandibular difference, and in girls - the distances 1u_Avert (the distance from the point of Is1u to the perpendicular to the Frankfurt area through point A); highest values for boys and girls from Podillia are 1l_APog distances (distance from Is1L to A-Pog line).

Thus, almost half of the cephalometric parameters obtained in the boys and girls of Podillia with orthognathic bite have distinct differences with the magnitude of these parameters obtained by J.McNamara.

Conclusion

1. Significant gender differences in cephalometric parameters used in the J.McNamara method between the boys and girls of Podillia with orthognathic bite are set for effective length of the upper and lower jaw, upper-mandibular difference and lower face height (higher in boys) and the values of the basic angle between spinal and mandibular planes (higher in girls).

2. Differences of cephalometric parameters obtained by J.McNamara of the indices obtained in boys and girls of Podillia with orthognathic bite are set independently from the sex for effective length of the upper and lower jaw, lower height of the face and distance of 1l_APog, and also only for young men for the upper-mandibular difference, and for girls - for a distance of 1u_Avert.

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Реферати

ВИЗНАЧЕННЯ НОРМАТИВНИХ ЦЕФАЛОМЕТРИЧНИХ ПАРАМЕТРІВ ЗА МЕТОДОМ ДЖЕЙМСА МАКНАМАРИ ДЛЯ УКРАЇНСЬКИХ ЮНАКІВ ТА ДІВЧАТ
Гунас І. В., Дмітрієв М. О., Тихолаз В. О., Шінкарук-Диковицька М. М., Пастухова В. А., Мельник М. П., Рудий Ю. Й.

В статті наведені цефалометричні параметри які використовуються в цефалометричному аналізі за методом J. McNamara у юнаків та дівчат Подільського регіону України з ортогнатичним прикусом, оцінка статевих розбіжностей даних параметрів (в юнаків встановлені достовірно більші значення більшості показників що характеризують співвідношення між верхньою та нижньою щелепами, а у дівчат – лише базисного кута) та проведено порівняння отриманих результатів з даними, що були отримані Джеймсом Макнамарою. Показано, що майже половина цефалометричних параметрів отриманих в юнаків і дівчат Поділля з ортогнатичним прикусом мають виражені відмінності з величиною даних параметрів отриманих Джеймсом Макнаморою.

Ключові слова: бокові телерентгенограми голови, цефалометрія, юнакі, дівчата, аналіз Макнамари.

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ОПРЕДЕЛЕНИЕ НОРМАТИВНЫХ ЦЕФАЛОМЕТРИЧЕСКИХ ПАРАМЕТРОВ С ПОМОЩЬЮ МЕТОДА ДЖЕЙМСА МАКНАМАРЫ ДЛЯ УКРАИНСКИХ ЮНОШЕЙ И ДЕВУШЕК
Гунас И. В., Дмитриев Н. А., Тихолаз В. А., Шинкарук-Диковицкая М. М., Пастухова В. А., Мельник М. П., Рудый Ю. И.

В статье наведены цефалометрические параметры которые используются в цефалометрическом анализе за методом J. McNamara у юношей и девушек Подольского региона Украины с ортогатическим прикусом, оценка половых различий данных параметров (у юношей установлены достоверно большие значения большинства показателей характеризующих соотношения между верхней и нижней челюстями, а у девушек – лишь базисного угла) и проведено сравнение полученных результатов с данными полученными Джеймсом Макнамарой. Показано, что почти половина цефалометрических параметров у юношей и девушек Подолья с ортогатическим прикусом имеют выраженные отличия по сравнению с величиной данных параметров полученных Джеймсом Макнамарой.

Ключевые слова: боковые телерентгенограммы головы, цефалометрия, юноши, девушки, анализ Макнамары.

Рецензент Єрошенко Г.А.