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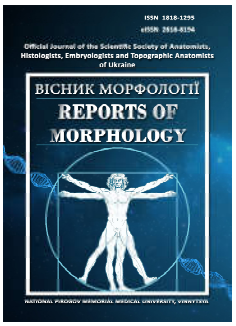

Features of cephalometric parameters, which usually do not change during surgery and orthodontic interventions, in Ukrainian young men and women with orthognathic occlusion and different types and profiles of the face according to Schwarz A.M.

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During the existence of the X-ray method of research, numerous author's methods of cephalometric examination and analysis using the method of lateral teleroentgenography (methods by Schwarz, Down's, Steiner, Tweed's, Harvold, Ricketts, McNamara, Jaraback, Burstone, Bjork, etc.) have been developed. Dentists around the world prefer certain methods, each of which has its advantages and disadvantages. But there is still no single unified methodology for such research and doctors and researchers are constantly trying to improve them and gain new information about their effectiveness. The aim of the study was to establish cephalometric teleroentgenographic parameters and determine their features in Ukrainian young men and women with orthognathic occlusion depending on profiles and facial types according to Schwarz A.M. (hereinafter orthognathic occlusion), divided into separate groups of studies on different profiles and different face types according to Schwarz A.M. (3 groups of different profiles and 3 groups of different face types for people of each sex). Cephalometric teleroentgenographic parameters, which usually do not change during surgery and orthodontic interventions, were studied. Statistical mathematical processing of the research results was performed in the licensed package "Statistica 6.0" using non-parametric methods of evaluation of the obtained results. Numerical reliable and tendencies of differences in certain indicators between groups of young men or women with different profiles or face types have been established. The greatest differences, both in young men and women, were recorded between the indicators determined by the methods of cephalometry by Schwarz A.M. and Bjork A., and the least - by the method of Ricketts R.M. The obtained results testify to the expediency of using the division of young men and women into separate groups by profile and type of face to adhere to the personalized principle in the morphological assessment of cephalometric and gnatometric indicators of lateral teleroentgenography.

Keywords: *young men, young women, orthognathic occlusion, lateral teleroentgenography of the head, cephalometric parameters, types and profiles of the face according to Schwarz A.M.*

Introduction

Establishing morphometric parameters of various organs and structures of the human body has always been one of the main tasks of human anatomy as a basic science. This fully applies to craniometry, determination of morphometric parameters of craniofacial structures, morphometric parameters of the human dental system, and so on. Accumulated over hundreds of years of observations and research, a huge amount of factual material needs constant updating and detailing to determine the characteristics of the values of these indicators in the population of different racial, sex, population, age, ethnic groups, etc. [17, 22, 28].

Conducting cephalometric examinations and taking into account cephalometric parameters is extremely important in practical dental activities, especially in recent decades due to the widespread introduction in diagnostic practice of

radiological methods, one of which is the method of teleroentgenography of the head - obtaining a survey image of the head, skull projections by X-ray examination [20, 21].

The use of teleroentgenography allows to obtain a lifetime image that best corresponds to the actual size of the head and its bone structures and their location and allows to obtain not only qualitative but also important quantitative morphometric parameters. An important advantage of this research method is the ability to display not only bone structures but also the contours of the soft tissues of the face [6, 22, 23].

Lateral teleroentgenography with determination of cephalometric parameters, indicators of the dental system are an extremely important diagnostic method in dentistry, especially in orthodontics, maxillofacial surgery, orthopedic dentistry to determine the structure of the cerebral and facial skull, features of jaw structures, assessment of symmetry determination of congenital or acquired pathological changes of the dental system, etc. [26, 29].

This method of research and its results are important at all stages of patient management, starting from planned or urgent diagnosis and further to plan the nature and extent of possible intervention and evaluate the effectiveness of treatment, both early and long-term [7, 12, 25].

During the existence of the X-ray method of research, numerous author's methods of cephalometric research and analysis using the method of lateral teleroentgenography have been developed. The most famous are the methods of Schwarz, Down's, Steiner, Tweed's, Harvold, Ricketts, McNamara, Jaraback, Burstone, Bjork, which have found their supporters in different countries around the world. Each of the author's methods is important, quite informative, has both its advantages and disadvantages. But the very existence of such a large number of methods of cephalometric analysis, instead of one unified, indicates their certain imperfection, which is the subject of discussion among scientists and practitioners and encourages further development and improvement of the methodological framework in this direction. It is also important that the author's indicators in most cases are obtained on certain contingents of the population of individual countries. At the same time, a number of studies indicate the presence of significant differences in the results depending on racial, ethnic, population, sex and other group characteristics of the studied patients [1-5, 8, 9, 11, 13].

The aim of the work is to establish cephalometric teleroentgenographic indicators and determine their features in Ukrainian young men and young women with orthognathic occlusion depending on the profiles and face types according to Schwarz A.M.

Materials and methods

Lateral teleroentgenograms were studied and analyzed in 49 young men (age group from 17 to 21 years) and 76 young women (age group from 16 to 20 years) with physiological occlusion as close as possible to orthognathic (hereinafter orthognathic occlusion) (part of primary cephalometric parameters obtained from the bank data of the research center of National Pirogov Memorial Medical University, Vinnytsya). Groups of young men and young women of different profiles and different types of faces were formed according to Schwarz A.M. [27, 28] (Table 1).

Table 1. Quantitative distribution of young men and women depending on the profile of the face or type of face.

Research groups	Young men	Young women
1 profile (back face profile by Schwarz A.M.)	23	37
2 profile (straight face profile by Schwarz A.M.)	9	15
3 profile (front face profile by Schwarz A.M.)	17	24
1 type (back face type by Schwarz A.M.)	13	23
2 type (average face type by Schwarz A.M.)	18	24
3 type (front face type by Schwarz A.M.)	18	29

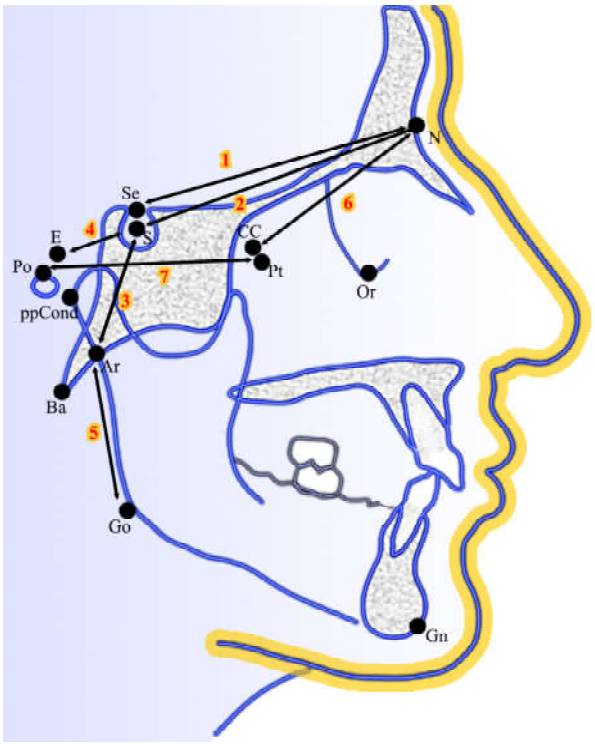

Fig. 1. Cephalometric distances of baseline parameters, which usually do not change during surgery and orthodontic interventions. 1 - distance N-Se; 2 - distance N-S; 3 - distance S-ar; 4 - distance S-E; 5 - ar-Go distance; 6 - distance N-CC; 7 - P-PTV distance.

Teleroentgenography was performed on a dental cone-beam tomograph Veraviewepocs 3D Morita (Japan).

Cephalometric analysis was performed using licensed medical software OnyxCeph^{3}™, version 3DPro (Image Instruments GmbH, Germany), which is designed for image management and analysis in dentistry for diagnosis, treatment and presentation of patients in general dentistry, orthodontics, orthopedics, implantology, facial surgery, etc.

Cephalometric points were determined in accordance

Fig. 2. Cephalometric angles of baseline parameters, which usually do not change during surgery and orthodontic interventions. 10 - angle H; 11 - angle N-S-Ar; 12 - angle N-S-Ba; 13 - angle POr-NBa.

with the recommendations of Phulari B.S. [24] and Doroshenko S.I. and Kulginsky E.A. [19].

Figures 1 and 2 show the cephalometric points, lines, distances and angles that were determined.

Cephalometric points (see Fig. 1):

N (nasion) - the most anterior point of the fronto-nasal suture (connection of the frontal bone and nasal bone in the plana sagittalis);

SE (sellia turcica entru) - a constructive point in the middle of the distance between the posterior and anterior inclined processes of the sphenoid bone;

E - structural point is located at the intersection of the perpendicular from the point ppCond (the most dorsally located point of the mandibular head) to the line S-N;

S (sella) - constructive point in the center of the sella turcica;

CC (center of cranium according to Ricketts) - constructive point at the intersection of Ba-N and Pt-Gn lines;

Pt (pterygomaxillare) - the upper distal point of the pterygomandibular cleft, located at the intersection of the round hole with the posterior wall of the pterygomandibular cleft;

Po (porion) - is located on the upper edge of the external auditory canal;

Or (orbitale) - the lowest part of the infraorbital margin, located on the orbital margin of the chin bone;

Ar (articulare) - the intersection of the anterior surface of the main part of the occipital bone with the posterior surface of the neck of the mandible;

Ba (basion) - the lowest point of the anterior edge of the large occipital foramen in the plana sagittalis;

Go (gonion) - the posterior point on the lower contour of the body of the lower jaw.

In this study, we, according to the author's methods of cephalometric analysis of lateral teleroentgenograms, determined a group of basic, key cephalometric parameters that usually do not change during surgery and orthodontic interventions and in relation to which during the analysis of lateral radiographs determine the inclination, anteroposterior or vertical location (upper and lower jaws, closing plane, individual teeth) (see Fig. 1, Fig. 2):

- according to Schwarz A.M.: distance N-Se - distance from point Se to point N, or length of the front part of the skull base (mm); angle H is the angle formed by the lines Po-Or (Frankfurt plane (Fp)) and Pn (nasal perpendicular, perpendicular line from point N '(skin nasion) to line Se-N)), determines the angle of inclination of the Frankfurt plane to the base skull (°);

- according to Bjork A.: angle N-S-Ar (saddle angle) - the angle between the anterior cranial base and the lateral cranial base, which determines the position of the temporomandibular joint and glenoid fossae and is formed by lines N-S and S-ar (°); angle N-S-Ba - the angle formed by the lines S-N (front of the skull base) and S-Ba (°); N-S index: S-Ar ' - indicator of the ratio of distances ar'-S and N-S;

- by Jarabak J. R.: distance N-S - length of the anterior cranial base, the distance from point N to point S (mm); distance S-ar - the length of the lateral cranial base, the distance from point S to point ar (mm); indicator S-ar:ar-Go - indicator of the ratio of S-ar and ar-Go distances;

- according to Steiner C. C.: distance S-E - length of the posterior part of the skull base (according to Steiner), distance from point S to structural point E (mm);

- by Burstone C. J.: distance ar-Go - the length of the branch of the mandible, the distance from the point Ar to the point Go (mm);

- according to Ricketts R.M.: angle POr-NBa - angle of cranial inclination (deflection), formed by lines Po-Or and Ba-N (°); distance N-CC - anterior length of the skull base, distance from point N to point SS (mm); distance P-PTV - the distance from point Po to point Pt, parallel to the Frankfurt plane (mm).

Statistical mathematical processing of the research results was performed in the licensed package "Statistica 6.0" using non-parametric methods of evaluation of the obtained results. The reliability of the difference between the values between the independent quantitative values was determined using the U-test of Mann-Whitney.

Results

When comparing the values of N-Se distance in young men of different facial profiles, we found statistically significant differences: higher values of this indicator in

Table 2. Cephalometric indicators of N-Se, H, S-E and ar-Go in young men and women with different profiles or with different face types.

Groups	Young men			Young women		
	(M±σ)	p		(M±σ)	p	
N-Se (mm)						
Profile 1	67.70±2.18	p_{1-2}	<0,05	64.89±6.33	p_{1-2}	=0.090
Profile 2	69.78±2.28	p_{1-3}	<0,01	65.53±2.10	p_{1-3}	>0.05
Profile 3	74.65±15.46	p_{2-3}	>0,05	66.04±5.05	p_{2-3}	>0.05
Type 1	68.38±2.96	p_{1-2}	>0,05	65.27±3.84	p_{1-2}	>0.05
Type 2	72.56±15.24	p_{1-3}	>0,05	65.67±6.96	p_{1-3}	>0.05
Type 3	69.94±3.84	p_{2-3}	>0,05	65.24±4.79	p_{2-3}	>0.05
H (°)						
Profile 1	95.35±2.85	p_{1-2}	>0,05	95.32±2.51	p_{1-2}	>0.05
Profile 2	94.44±2.13	p_{1-3}	<0,01	94.13±2.33	p_{1-3}	<0.01
Profile 3	91.88±3.30	p_{2-3}	<0,05	92.96±3.21	p_{2-3}	>0.05
Type 1	96.31±2.75	p_{1-2}	<0,05	96.17±2.48	p_{1-2}	<0.01
Type 2	93.44±3.09	p_{1-3}	<0,01	93.88±1.75	p_{1-3}	<0.01
Type 3	92.83±3.03	p_{2-3}	>0,05	93.28±3.27	p_{2-3}	>0.05
S-E (mm)						
Profile 1	21.22±2.65	p_{1-2}	>0,05	19.43±2.58	p_{1-2}	>0.05
Profile 2	20.11±2.93	p_{1-3}	>0,05	18.67±1.59	p_{1-3}	>0.05
Profile 3	21.82±5.95	p_{2-3}	>0,05	18.13±3.86	p_{2-3}	>0.05
Type 1	21.62±2.53	p_{1-2}	>0,05	20.30±2.49	p_{1-2}	>0.05
Type 2	21.67±5.77	p_{1-3}	>0,05	19.00±2.38	p_{1-3}	<0.01
Type 3	20.50±2.96	p_{2-3}	>0,05	17.62±3.18	p_{2-3}	<0.05
ar-Go (mm)						
Profile 1	50.92±4.87	p_{1-2}	=0,094	46.45±5.55	p_{1-2}	>0.05
Profile 2	54.08±3.46	p_{1-3}	<0,05	48.19±4.06	p_{1-3}	=0.074
Profile 3	57.59±12.66	p_{2-3}	>0,05	48.58±5.97	p_{2-3}	>0.05
Type 1	50.29±4.77	p_{1-2}	>0.05	46.90±3.63	p_{1-2}	>0.05
Type 2	54.79±12.93	p_{1-3}	<0.01	47.31±6.33	p_{1-3}	>0.05
Type 3	55.38±4.06	p_{2-3}	<0.05	48.07±6.02	p_{2-3}	>0.05

Notes: here and in the following tables, p_{1-2}, p_{1-3}, p_{2-3} - the significance of differences in relevant indicators between young men or women of relevant profiles or face types.

groups of young men with the second and third facial profiles, compared with young men of the first facial profile (respectively, p<0.05 and p<0.01) (Table 2). Among groups of young women with different facial profiles, this indicator showed only a lower value in persons with the first profile, compared with young women with the second profile (p=0.090) (see Table 2).

The values of the angle H in young men with the first and second facial profiles are significantly higher than in young men with the third facial profile (respectively, p<0.01 and p<0.05), and in young men with the first type of face - significantly higher than in young men with the second and with the third face type (respectively, p<0.05 and p<0.01) (see Table 2). In young women with the first facial profile, this figure was higher than in young women with the third facial profile (p<0.01), and in young women with the first type of face - greater than in young women with the second and third facial types (p<0.01 in both cases) (see Table 2).

The S-E distance in young women with the first and second face types is significantly greater than in young women with the third face type (respectively, p<0.01 and p<0.05) (see Table 2).

The ar-Go distance in young men with the third facial profile was significantly greater than in young men with the first profile (p<0.05), and in young men with the second profile - slightly greater than in young men with the first facial profile (p=0.094). There is only a tendency (p=0.074) to higher values of ar-Go distance in young women with the third facial profile, compared with young women with the first profile (see Table 2).

The values of the angle N-S-Ar, both in young men and young women with the first profile of the face are significantly higher than in young men or young women with the third profile (p<0.05 in both cases); also slightly more important in young women with the first facial profile than in young women with the second profile (p=0.082) (Table 3). Young women with the first type of face have a significantly larger N-S-Ar angle than young women with the second and third

Table 3. Cephalometric indicators of N-S-Ar, N-S-Ba and N-S:S-Ar in young men and women with different profiles or with different face types.

Groups	Young men			Young women		
	(M±σ)	p		(M±σ)	p	
N-S-Ar (°)						
Profile 1	126.9±5.1	p_{1-2}	>0.05	126.3±4.9	p_{1-2}	=0.082
Profile 2	125.8±6.6	p_{1-3}	<0.05	124.2±4.2	p_{1-3}	<0.05
Profile 3	123.3±5.5	p_{2-3}	>0.05	122.2±7.2	p_{2-3}	>0.05
Type 1	127.8±5.4	p_{1-2}	>0.05	128.3±5.1	p_{1-2}	<0.01
Type 2	124.6±4.7	p_{1-3}	>0.05	124.4±4.0	p_{1-3}	<0.001
Type 3	124.6±6.5	p_{2-3}	>0.05	121.9±6.3	p_{2-3}	>0.05
N-S-Ba (°)						
Profile 1	130.2±4.6	p_{1-2}	>0.05	131.2±5.2	p_{1-2}	=0.055
Profile 2	131.0±5.8	p_{1-3}	<0.05	128.5±3.8	p_{1-3}	<0.05
Profile 3	126.2±5.7	p_{2-3}	>0.05	127.6±6.9	p_{2-3}	>0.05
Type 1	131.2±4.0	p_{1-2}	>0.05	132.2±5.7	p_{1-2}	<0.05
Type 2	128.4±6.1	p_{1-3}	>0.05	129.5±3.7	p_{1-3}	<0.05
Type 3	128.0±5.6	p_{2-3}	>0.05	127.4±6.4	p_{2-3}	>0.05
N-S:S-Ar						
Profile 1	3.422±0.460	p_{1-2}	>0.05	3.589±0.470	p_{1-2}	>0.05
Profile 2	3.778±0.618	p_{1-3}	>0.05	3.740±0.307	p_{1-3}	=0.082
Profile 3	3.694±0.612	p_{2-3}	>0.05	4.113±1.153	p_{2-3}	>0.05
Type 1	3.431±0.477	p_{1-2}	>0.05	3.435±0.473	p_{1-2}	<0.05
Type 2	3.578±0.544	p_{1-3}	>0.05	3.721±0.461	p_{1-3}	<0.01
Type 3	3.694±0.622	p_{2-3}	>0.05	4.114±1.000	p_{2-3}	>0.05

Table 4. Cephalometric indicators of N-S, S-ar and S-ar:ar-Go in young men and women with different profiles or with different face types.

Groups	Young men			Young women		
	(M±σ)	p		(M±σ)	p	
N-S (mm)						
Profile 1	69.26±2.07	p_{1-2}	<0.05	66.46±6.34	p_{1-2}	=0.092
Profile 2	71.22±1.99	p_{1-3}	<0.01	66.93±2.43	p_{1-3}	>0.05
Profile 3	75.65±15.68	p_{2-3}	>0.05	67.63±4.89	p_{2-3}	>0.05
Type 1	69.92±2.56	p_{1-2}	>0.05	66.87±3.72	p_{1-2}	>0.05
Type 2	73.94±15.38	p_{1-3}	>0.05	67.08±7.24	p_{1-3}	>0.05
Type 3	71.11±3.64	p_{2-3}	>0.05	66.83±4.58	p_{2-3}	>0.05
S-ar (mm)						
Profile 1	34.43±2.92	p_{1-2}	>0.05	32.00±4.15	p_{1-2}	>0.05
Profile 2	33.22±1.30	p_{1-3}	=0.061	32.20±1.70	p_{1-3}	>0.05
Profile 3	38.59±9.35	p_{2-3}	<0.01	32.83±3.47	p_{2-3}	>0.05
Type 1	33.85±2.34	p_{1-2}	=0.082	32.00±2.92	p_{1-2}	>0.05
Type 2	37.33±8.98	p_{1-3}	>0.05	32.50±4.43	p_{1-3}	>0.05
Type 3	35.28±4.21	p_{2-3}	>0.05	32.38±3.30	p_{2-3}	>0.05
S-ar:ar-Go						
Profile 1	69.48±9.38	p_{1-2}	<0.05	69.14±7.34	p_{1-2}	>0.05
Profile 2	61.89±5.82	p_{1-3}	>0.05	66.00±6.96	p_{1-3}	>0.05
Profile 3	67.12±7.95	p_{2-3}	>0.05	67.46±8.80	p_{2-3}	>0.05
Type 1	69.69±7.12	p_{1-2}	>0.05	68.70±8.66	p_{1-2}	>0.05
Type 2	68.83±8.16	p_{1-3}	<0.05	69.29±6.82	p_{1-3}	>0.05
Type 3	63.94±9.48	p_{2-3}	<0.05	66.34±7.71	p_{2-3}	>0.05

face types (p<0.01 and p<0.001, respectively) (see Table 3).

The angle of N-S-Ba in both young men and young women with the first facial profile is significantly greater than in the corresponding sex groups with the third profile (p<0.05 in both cases); there is a pronounced tendency to a higher value of this indicator in young women with the first facial profile than in young women with the second profile (p=0.055) (see Table 3). Young women with the first type of face have a significantly larger N-S-Ba angle than young women with the second and third face types (p<0.05 in both cases) (see Table 3).

When comparing the values of the N-S:S-Ar indicator, no significant differences were found between young men with different profiles or with different facial types, as well as between young women with different facial profiles. Significantly higher values of NS:S-Ar in young women with the third and second facial types than in young women with the first type of face (respectively, p<0.01 and p<0.05), as well as higher values in young women with the second type of face, than in young women with the first type (p=0.082) (see Table. 3).

When comparing the values of the distance N-S in young men of different facial profiles found statistically significant differences: higher values of this indicator in groups of young men with the second and third facial profiles, compared with young men of the first facial profile (respectively, p<0.05 and p<0.01) (Table 4). Between the groups of young women with different facial profiles, only a smaller value of the N-S distance was found in persons with the first profile, compared with young women with the second profile (p=0.092) (see Table 4).

The S-ar distance in young men with the third facial profile is significantly greater than in young men with the second facial profile (p<0.01); there is also a tendency to its higher values in young men with the first profile of the face than in young men with the third profile (p=0.061) (see Table 4). There was also a slightly higher value of S-ar distance in young women with the second type of face than in young women with the first type (p=0.082) (see Table 4).

S-ar:ar-Go values were found to be higher in young men with the first facial profile compared to young men with the second profile (p<0.05) and in young men with the first and second facial types compared to young men with the third type (p<0.05 in in all cases) (see Table 4).

Values in young men of different groups by profile or face type did not differ significantly, and in young women recorded greater values of N-CC distance in persons with the second facial profile than with the first (p<0.05), and there were tendencies to higher values in young women

Table 5. Cephalometric indicators of POr-NBa, N-CC and P-PTV in young men and women with different profiles or with different face types.

Groups	Young men			Young women		
	(M±σ)	p		(M±σ)	p	
POr-NBa (°)						
Profile 1	26.29±3.35	p_{1-2}	>0.05	26.39±2.71	p_{1-2}	>0.05
Profile 2	24.84±2.54	p_{1-3}	>0.05	25.96±2.12	p_{1-3}	>0.05
Profile 3	24.84±2.22	p_{2-3}	>0.05	25.39±2.19	p_{2-3}	>0.05
Type 1	26.07±3.07	p_{1-2}	>0.05	26.20±2.85	p_{1-2}	>0.05
Type 2	25.26±3.08	p_{1-3}	>0.05	25.42±1.71	p_{1-3}	>0.05
Type 3	25.39±2.69	p_{2-3}	>0.05	26.30±2.64	p_{2-3}	>0.05
N-CC (mm)						
Profile 1	57.82±3.07	p_{1-2}	>0.05	54.36±5.53	p_{1-2}	<0.05
Profile 2	57.67±3.24	p_{1-3}	>0.05	55.49±2.46	p_{1-3}	>0.05
Profile 3	61.62±13.95	p_{2-3}	>0.05	54.85±4.01	p_{2-3}	>0.05
Type 1	58.66±2.39	p_{1-2}	>0.05	55.47±3.95	p_{1-2}	>0.05
Type 2	61.23±13.66	p_{1-3}	>0.05	55.54±6.11	p_{1-3}	=0.071
Type 3	57.32±3.33	p_{2-3}	>0.05	53.49±3.24	p_{2-3}	=0.058
P-PTV (mm)						
Profile 1	-39.46±2.87	p_{1-2}	>0.05	-37.91±3.81	p_{1-2}	>0.05
Profile 2	-40.59±1.69	p_{1-3}	>0.05	-37.09±2.13	p_{1-3}	>0.05
Profile 3	-42.23±8.85	p_{2-3}	>0.05	-36.96±4.06	p_{2-3}	>0.05
Type 1	-39.97±2.55	p_{1-2}	>0.05	-37.50±2.72	p_{1-2}	>0.05
Type 2	-41.03±8.74	p_{1-3}	>0.05	-37.63±3.98	p_{1-3}	>0.05
Type 3	-40.70±2.94	p_{2-3}	>0.05	-37.27±4.02	p_{2-3}	>0.05

with first and second facial types than young women with the third facial type (respectively, p=0.071 and p=0.058) (Table 5).

No significant differences were found between POr-NBa angle or P-PTV distance in either young men or women with different facial profiles or with different facial types (see Table 5).

Discussion

Thus, we have established the following features of the values of the group of cephalometric indicators, which are not subject to correction in the implementation of orthodontic interventions between groups of young men with different facial profiles according to Schwarz A.M.:

- in young men with the first facial profile significantly higher values of S-ar: ar-Go (by 12.3%; p<0.05) than in young men with the second profile and angles H (by 3.8%; p<0.01), NS-Ar (by 2.9%; p<0.05) and NS-Ba (by 3.2%; p<0.05) than in young men with the third profile;

- young men with the second facial profile had significantly higher values of N-Se distance (by 3.1%; p<0.05) than young men with the first profile and angle H (by 2.8%; p<0.01) than young men with the third profile;

- in young men with the third facial profile significantly higher values of distances N-Se (by 10.3%; p<0.01), ar-Go (by 13.1%; p<0.05) and NS (by 9.2%; p<0.01) and a tendency to greater values of S-ar distance (by 12.1%; p=0.061) than in young men with the first profile and significantly higher values of S-ar distance (by 16.2%; p<0.01) than in young men with the second facial profile.

The following differences in cephalometric parameters of this group were found in young women with different facial profiles:

- young women with the first facial profile had significantly higher values of angles: H (by 2.5%; p<0.01), NS-Ar (by 3.4%; p<0.05) and NS-Ba (by 2.8%; p<0.05) than in young women with a third facial profile. We can also note a pronounced tendency to higher values of the angle N-S-Ba (by 2.1%; p=0.055) and higher values of the angle N-S-Ar (by 1.9%; p=0.082) compared to young women with the second facial profile;

- young women with the second facial profile had a significantly higher value of the N-CC distance (by 2.1%; p<0.05) and a greater value of the N-S distance (by 0.7%; p=0.092) compared to young women with the first facial profile;

- young women with the third facial profile had a significantly higher value of the N-CC distance (by 2.1%; p<0.05) and a higher value of the N-S distance (by 0.7%; p=0.092) compared to young women with the first facial profile.

Summarizing the analysis of the results obtained in groups of young men and women with different facial profiles, we can conclude about the more pronounced variability of the studied indicators in young men than in young women, as the number of established differences (11 significant differences and 1 tendency to differences between groups of boys against 4 significant differences and 2 tendencies to differences between groups of girls) and the number of indicators that were different (8 indicators out of 13 studied in young men - N-Se, H, ar-Go, NS-Ar, NS-Ba, NS, S- ar, S-ar:ar-Go and 4 indicators out of 13 studied in young women - H, NS-Ar, NS-Ba, N-CC, ar-Go).

The greatest differences between the groups of different profiles of young men or young women were recorded between the indicators determined by the method of cephalometry according to Schwarz A. M. (3 in young men and 1 in young women), Bjork A. (2 in young men and 3 in young women) and Jarabak J. R. (5 in young men). At the same time, the indicators determined by Ricketts R.M. revealed only 1 significant difference.

Summarizing and analyzing the features of the values of the group of cephalometric indicators, which are not subject to correction in the implementation of orthodontic interventions between groups of young men with different facial types according to Schwarz A.M., it was found:

- in young men with the first type of face significantly higher value of the angle H (by 3.1%; p<0.05) than in young men with the second type of face and angle H (by 3.7%; p<0.01) and the indicator S-ar:ar-Go (by 9.0%; p<0.05) than in young men with the third type;

- in young men with the second type of face significantly higher values of S-ar: ar-Go (by 7.6%; p<0.05) than in young men with the third type of face and higher values of S-ar (by 10.3%; p=0.082) than in young men with the first type;

- in young men with the third type of face significantly higher values of ar-Go (by 10.1%; p<0.01) than in young men with the first type and significantly higher values of ar-Go distance (by 1.1%; p<0.05) than in young men with the second type of face.

In young women with different face types, the following differences were found in the indicators studied:

- in young women with the first type of face significantly higher values of the angles H (by 2.4%; p<0.01), NS-Ar (by 3.1%; p<0.01) and NS-Ba (by 2.1%; p<0.05), compared with young women with the second type of face and significantly higher values of the angles H (by 2.5%; p<0.01), NS-Ar (by 5.3%; p<0.001) and NS-Ba (by 3.8%; p<0.05) and the distance SE by 15.2%; p<0.01), as well as the tendency to higher values of the distance N-CC (by 3.7%; p=0.071), compared with young women with the third type of face;

- young women with the second type of face had a significantly higher value of NS: S-Ar (by 8.3%; p<0.05) and a greater value of the distance S-ar (by 10.3%; p=0.082) than young women with the first type of face and significantly higher values of S-ar:ar-Go (by 7.6%; p<0.05), distance S-E (by 7.8%; p<0.01) and a tendency to higher values of distance N-CC (by 3.8%; p=0.058) than in young women with the third type of face;

- young women with the third type of face had significantly higher values of ar-Go distance (by 10.1%; p<0.01) and N-S:S-Ar (by 19.8%; p<0.01) than young women with the first

type of face.

Thus, in the groups of young men and young women with different facial types, in contrast to the results of comparison of persons with different facial profiles, more pronounced variability of the studied indicators in young women than in young men as the number of established differences (11 significant differences and 2 tendencies to differences between groups of young women against 6 significant differences between groups of young men) and the number of indicators that were different (6 indicators out of 13 studied in young women - H, SE, NS-Ar, NS-Ba, NS: S-Ar and P- PTV and 3 indicators from 13 studied at young men - H, ar-Go, S-ar: ar-Go).

Most differences between the groups of different types of faces of young men or young women were recorded between the indicators determined by the method of cephalometry by Schwarz A.M. (2 in young men and 2 in young women) and Bjork A. (4 in young women). At the same time, the indicators determined according to Ricketts R.M. revealed only 2 tendencies to differences in young women.

The following indicators did not have significant differences between certain groups of people of different sexes of different profiles or different types of faces: POr-NBa angle and P-PTV distance according to Ricketts R.M.; distance N-Se by Shwars A.M.; distance N-S and S-ar and index S-ar: ar-Go according to Jarabak J.R.; distance S-E by Steiner C.C.; N-S index: S-Ar and N-S-Ar angle by Bjork A.; ar-Go distance by Burstone C.J.

A number of researchers have determined cephalometric parameters in Ukrainian young men and young women, using various generally accepted methods of cephalometry [14-18, 20, 21].

Comparing our results for young men or women with different profiles or different types of faces, with the results of these authors for young men and young women in general, without division into groups by types and profiles of faces, it should be noted that there are a number of differences in our indicators. Thus, in young men with the first and second facial profiles and with the third facial type, the values of N-CC distance (according to the Ricketts R.M. method) were smaller, and in young men with the third facial profile, on the contrary, greater than in young men without division into profiles and types face according to Chernysh A.V. and others. (2018); and in young women with the first profile and in young women with the third type of face - smaller [14]. The P-PTV distance in adolescents with the third facial profile was greater than in adolescents without division on the facial profile according to Chernysh A.V. et al. and approached the author's index of Ricketts R.M., and in young women with the third profile - on the contrary, less than the established results for Ukrainian young women in general [14].

The ar-Go distance (according to the Burstone C.J. method) according to the results of our research in young men with first profile and the first type of face is greater than in young men in general, without division into individual profiles and face types according to Dmitriev M.O., Chernysh A.V. and Chugu T.V. [16]. It should be noted that both our results (for all profiles and types of faces) and the results of young people in general [16] the value of this indicator in Ukrainian young men is greater than those of Burstone C.J. [10]. At the same time, the results of our studies did not show differences between the values of this indicator in young women of different profiles and face types compared with the results of Dmitriev M.O., Chernysh A.V. and Chugu T.V. [16] and Burstone C.J. [10].

Comparing the distance N-Se and the angle H according to the method of Shwars A.M. with the same indicators determined by Dmitriev M.O. et al. [18] in young men and young women of the Podillia region of Ukraine in general, without division into separate types and profiles of the face, it should be noted that young women of all types and profiles of the face, as well as young men with the second profile or the third type of face coincided with the values defined for young men and young women in general. On the other hand, it is smaller in young men with the first profile or the first type of face, and larger in young men with the third profile or the second type of face than in young men without division into types and profiles of the face. The angle H in young men with the third facial profile is smaller, and in young men with the first type of face and in young women with the first type of face - greater than in young men or young women in general, without division into individual types and profiles of the face. It should also be noted that the distance S-E according to the method of Steiner C.C. in young women with the third type of face have lover values than in Ukrainian young women in general [15].

Thus, the results indicate that for a more individualized approach to the determination of cephalometric parameters in young men and young women, it is advisable to use the definition of their profile and face type.

Conclusions

1. The values of cephalometric teleroentgenographic parameters, which usually do not change during surgical and orthodontic interventions in Ukrainian young men and young women with orthognathic occlusion with different profiles and face types according to Schwarz A.M. have been established.

2. There are differences in certain indicators between groups of young men or young women with different profiles or types of faces. The greatest differences, both in young men and young women, were recorded between the indicators determined by the methods of cephalometry by Schwarz A. M. and Bjork A., and the least - by the method of Ricketts R.M.

3. The obtained results testify to the expediency of using the division of young men and young women into separate groups by profile and type of face to adhere to the personalized principle in the morphological assessment of cephalometric and gnatometric indicators of lateral teleroentgenograms.

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ОСОБЛИВОСТІ ЦЕФАЛОМЕТРИЧНИХ ПОКАЗНИКІВ, ЯКІ ЗАЗВИЧАЙ НЕ ЗМІНЮЮТЬСЯ ПІД ЧАС ХІРУРГІЧНИХ ТА ОРТОДОНТИЧНИХ ВТРУЧАНЬ, В УКРАЇНСЬКИХ ЮНАКІВ І ДІВЧАТ З ОРТОГНАТИЧНИМ ПРИКУСОМ І РІЗНИМИ ТИПАМИ ТА ПРОФІЛЯМИ ОБЛИЧЧЯ ЗА SCHWARZ A.M.

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За час існування рентгенологічного методу дослідження розроблені чисельні авторські методики цефалометричного дослідження та аналізу з застосуванням методу бокової телерентгенографії (методики Schwarz, Down's, Steiner, Tweed's, Harvold, Ricketts, McNamara, Jaraback, Burstone, Bjork тощо). Лікарі-стоматологи різних країн світу надають перевагу певним окремим методикам, кожна з яких має як свої переваги, так і окремі недоліки. Але досі не існує єдиної уніфікованої методики таких досліджень і постійно лікарі та дослідники намагаються їх удосконалити і отримати нові відомості щодо їх ефективності. Мета дослідження - встановлення цефалометричних телерентгенографічних показників і визначення їх особливостей в українських юнаків і дівчат із ортогнатичним прикусом в залежності від профілів і типів обличчя за Schwarz A.M. Проведено цефалометричне дослідження і аналіз бокових телерентгенограм голови у 49 юнаків та 76 дівчат із фізіологічним прикусом максимально наближеним до ортогнатичного (в подальшому ортогнатичний прикус), розділених на окремі групи досліджень за різними профілями і різними типами обличчя за Schwarz A.M. (по 3 групи різного профілю і по 3 групи різного типу обличчя для осіб кожної статі). Досліджували цефалометричні телерентгенографічні показники, які зазвичай не змінюються під час проведення хірургічних та ортодонтичних втручань. Статистичну математичну обробку результатів дослідження провели в ліцензійному пакеті "Statistica 6.0" з використанням непараметричних методів оцінки отриманих результатів. Встановлені чисельні достовірні та тенденції відмінностей за визначеними показниками між групами юнаків, або дівчат з різними профілями, або типами обличчя. Найбільше відмінностей, як у юнаків, так і у дівчат зафіксовано між показниками, визначеними за методиками цефалометрії за Schwarz A.M. та за Bjork A., а найменше - за методикою Ricketts R.M. Отримані результати свідчать про доцільність використання розподілу юнаків і дівчат на окремі групи за профілем і типом обличчя для дотримання персоналізованого принципу у морфологічній оцінці цефалометричних і гнатометричних показників бокових телерентгенограм.

Ключові слова: *юнаки, дівчата, ортогнатичний прикус, бокова телерентгенографія голови, цефалометричні показники, типи та профілі обличчя за Schwarz A.M.*

ОСОБЕННОСТИ ЦЕФАЛОМЕТРИЧЕСКИХ ПОКАЗАТЕЛЕЙ, КОТОРЫЕ ОБЫЧНО НЕ ИЗМЕНЯЮТСЯ ВО ВРЕМЯ ХИРУРГИЧЕСКИХ И ОРТОДОНТИЧЕСКИХ ВМЕШАТЕЛЬСТВ, У УКРАИНСКИХ ЮНОШЕЙ И ДЕВУШЕК С ОРТОГНАТИЧЕСКОМ ПРИКУСОМ И РАЗЛИЧНЫМИ ТИПАМИ И ПРОФИЛЯМИ ЛИЦА ПО SCHWARZ A.M.

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За время существования рентгенологического метода исследования разработаны многочисленные авторские методики цефалометрического исследования и анализа с применением метода боковой телерентгенографии (методики Schwarz, Down's, Steiner, Tweed's, Harvold, Ricketts, McNamara, Jaraback, Burstone, Bjork и т.д.). Врачи-стоматологи разных стран мира отдают предпочтение определенным отдельным методикам, каждая из которых имеет как свои преимущества, так и отдельные недостатки. Но до сих пор не существует единой унифицированной методики таких исследований и постоянно врачи и исследователи пытаются их усовершенствовать и получить новые сведения об их эффективности. Цель исследования - установление цефалометрических телерентгенографических показателей и определение их особенностей у украинских юношей и девушек с ортогнатическим прикусом в зависимости от профилей и типов лица по Schwarz A.M. Проведено цефалометрическое исследование и анализ боковых телерентгенограмм головы у 49 юношей и 76 девушек с физиологическим прикусом максимально приближенным к ортогнатическому (далее ортогнатический прикус), разделенных на отдельные группы исследований по разным профилям и различным типам лица по Schwarz A.M. (по 3 группы разного профиля и по 3 группы разного типа лица для лиц каждого пола). Исследовали цефалометрические телерентгенографические показатели, которые обычно не изменяются во время проведения хирургических и ортодонтических вмешательств. Статистическую математическую обработку результатов исследования провели в лицензионном пакете "Statistica 6.0" с использованием непараметрических методов оценки полученных результатов. Установлены многочисленные достоверные различия и тенденции различий по определенным показателям между группами юношей или девушек с разными профилями или типами лица. Наибольшее количество различий, как у юношей, так и у девушек зафиксировано между показателями, определенными по методикам цефалометрии по Schwarz A.M. и по Bjork A., а меньше всего - по методике Ricketts R.M. Полученные результаты свидетельствуют о целесообразности использования распределения юношей и девушек на отдельные группы по профилям и типам лица для соблюдения персонализированного принципа в морфологической оценке цефалометрических и гнатометрических показателей боковых телерентгенограм.

Ключевые слова: *юноши, девушки, ортогнатический прикус, боковая телерентгенография головы, цефалометрические показатели, типы и профили лица по Schwarz A.M.*