EFFECT OF JAW GROWTH TYPE ON DENTOFACIAL ANGLE IN ANALYZING LATERAL TELERADIOGRAPHIC IMAGES

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Specific features of the dentofacial morphology have always attracted various specialists — morphologists, dentists, forensic physicians [1, 2, 5, 10, 11, 12]. To date, lateral head teleradiographic images still offer a fairly accurate diagnostic basis for dentofacial pathologies, and are used in dental clinic for orthodontic and prosthetic treatment [3]. There are methods of computer diagnostics proposed, which allow cephalometric analysis of various images, such as teleradiographic images of lateral and direct projections, computer tomograms at different levels, allowing evaluation of various craniofacial structures as a whole, and dentofacial segments, in particular [4, 9]. Most coordinate points and planes of teleradiographic imaging have been discussed in works by both national and foreign experts, while such works are used to diagnose pathologies and identify the effect of comprehensive treatment [6, 7]. The emergence of new data concerning dentofacial features in view of the gnathic and dental indicators, will aim us at detecting a relationship between their parameters and the position of the skull planes, as well as reveals the relevance of the issue in question. Assessment of the facial area growth type attracts orthodontists, whose tasks include the treatment of occlusion anomalies and the prediction of treatment outcomes, as well as that of relapse [8]. When analyzing teleradiographic images, the major planes include the skull base plane, the orbital, spinal, occlusal, and mandibular planes, which extend horizontally (anterior-posterior direction). The known diagonal lines include lines N-Ba and N-Go, which are meaningful in identifying the face growth type. However, we have found no marks that would allow us to separate the facial and the cranial parts of the head, and detect the relationship of this plane with other lines of the head, which served the aim of the study.

Aim of study:
to identify specific features of the dentofacial angle in people with different types of jaw growth.

MATERIAL AND METHODS

A cephalometric study was carried out involving 151 persons falling in the age group of 21–35. To perform the teleradiographic image analysis, common points were marked: N (Nasion), C (Condylion), Ar (Articulare), T1, T2, Pg (Pogonion). We have proposed the facial area plane of the head or the cranial-facial line (CFL), which passed through the points N and C, and separated the facial section of the head from the cranial one. The mandibular plane (ML) had a traditional structure and passed through the most convex points of the mandible lower body edge (points Gn and T2). The intersection of these lines shaped the dentofacial angle, which we used for the cephalometry analysis in people with different types of facial growth (horizontal, vertical and neutral). The type of face growth was determined based on the size of the mandibular angle, which was shaped by tangent lines to the lower edge of the body and the mandible ramus bones. The angle from 119° to 123° corresponded to a neutral type of jaw growth. A decrease and an increase in the angle pointed at the horizontal and vertical types of growth, respectively.

RESULTS AND DISCUSSION

The cephalometric analysis showed that in people with a neutral type of the facial area had the mandibular angle at 120.73±1.18°. At the same time, the dentofacial angle formed by the intersection of the craniofacial and mandibular planes was 43.51±2.87°. In people with a horizontal face growth, the mandibular angle was significantly smaller ($p \leq 0.05$), 108.93±3.62° in the

group in general. Besides, a significant decrease in the dentofacial angle (down to 36.61±2.17°) was observed. The vertical type of face growth was associated to an increase in the angles in question up to 126.11±2.19° and 51.24±1.22°, respectively.

CONCLUSION

The above suggests that there is an additional criterion proposed for identifying the type of the facial area growth, namely, the dentofacial angle. Identifying orientation points for constructing the angle poses no issue, so that may prove a good tool for orthodontists seeking to predict the treatment outcomes.

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