COMPARATIVE CHARACTERISTIC OF FACIAL PARAMETERS AMONG PATIENTS WITH VERTICAL-MESIAL FORM OF INCREASED TEETH WEAR

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The work presents special features of morphometric parameters among patients with vertical-mesial form of face and increased wear of teeth. Morphometric parameters of face with decompensated and compensated vertical-mesial form of increased teeth wear were compared to the norm. For patients with decompensated vertical-mesial form of increased teeth wear decrease in height of gnathic face part by an average of 10 mm with inter-occlusion gap of 4-10 mm is typical. For patients with compensated vertical-mesial form of increased teeth wear an insignificant decrease in height of gnathic face part is typical, especially height of lower jaw and inter-gnathic gap, with inter-occlusion gap within 0-3 mm. the received data can be used in defining tactics of orthodontic and orthopaedic treatment for patients with increased wear of teeth.

Keywords: orthodontia, orthopaedics, increased wear of teeth

Widespread of pathology in jaw-facial area, attended by decrease in height of gnathic face part is rather high and, according to the data of different authors, equals from 11% to 60% [1, 3]. Such variability is defined by imperfection of diagnostic methods, differences in terminology, lack of classification and definition of gnathic face part descent. At the same time specialists do not specify etiologic factors and dynamics of pathology development [2, 4, 5, 7].

An important part is occupied by patients with increased wear of teeth (IWT), and it is present in 11,8% to 42,6% of cases (2, 3, 4, 5, 8, 9, 10, 11).

IWT can be caused by morphological insufficiency of solid teeth tissue, teeth overload, chemical impact, professional hazards, functional condition of chewing muscles and temporal-lower-jaw joints, etc. (3, 4, 6, 7, 8).

Decompensated and compensated IWT are distinguished. Decompensated form is attended by decrease in gnathic face part height, and for compensated form decrease in gnathic face part does not happen or is insignificant. It takes place due to vacant (false, substitutive) hypertrophy of bone structures of alveolar crests (3, 4, 8, 9, 10, 11).

Decrease in gnathic face part height is influenced not only by degree of teeth wear, occlusion anomalies in different directions, but also changes in jaw-facial area that take place in terms of increased wear of solid teeth tissue, loss of antagonists, and other attending pathologic conditions [6, 8, 9]. At the same time there is no clear differentiation between forms of decrease in height of gnathic face part among patients with increased teeth wear. Basic morphometric parameters of face with decreased gnathic part are not displayed.

Research objective

Comparing morphometric parameters of face among patients with compensated and decompensated vertical-mesial form of increased teeth wear.

Materials and methods of research

We have undertaken morphometric research of cranio-facial complex among 30 patients (12 men and 18 women) with decompensated vertical-mesial form of increased teeth wear, and among 28 patients (13 men and 15 women) – with compensated.

Comparison of facial morphometric parameters in patients with compensated and decompensated vertical-mesial form of increased erosion of teeth.

Comparison group was formed of 64 people (27 men and 37 women) with physiological occlusion and intact teeth rows.

Kefalometric estimations were made with consideration of guidelines by Y.Y. Roginskiy (1968), F.E. Khoroshilkina (1991) and in accordance with requirements of anthropometry that imply defining distance between commonly-accepted points. Standard tool was used.

Research results and discussions

We have established a legislation in correlation between head form and different morphometric parameters of face in control group.

Morphologic features of head formation and its separate parts (face, gnathic face part, inter-gnathic gap, lower jaw) were determined. Morphometric parameters were studied with consideration of gender dimorphism. Sizes of head and face were studied. Interrelation between separate parameters of head among men and women was defined.

Results of studying morphometric parameters of head in comparison group are presented in table 1.

Thus, among men, most of morphometric parameters of head and face were larger than among women had a reliable difference.

On the whole, morphologic height of face and height of nasal part among men was larger than among women. At the same time, height of gnathic part had no reliable differences between men and women.

We should underline that height of teeth-alveolar part of upper jaw (sn –inc) corresponded to teeth-alveolar part of lower jaw (inc – spm) among men (21,82 + 1,17 and 21,96 + 1,89 correspondingly), as well as women (20,07 + 1,24 and 21,14 + 1,27 correspondingly). Height of lower jaw (inc– me), as a rule, exceeded size of teeth-alveolar part of upper as well as lower jaw. Combined height of teeth-alveolar parts in upper and lower jaw corresponded to size of lower jaw, and no gender dimorphism was registered according to these indicators.

The results of measuring facial skeleton among patients with decompensated vertical-mesial form of increased teeth wear are presented in table 2.

Table 1

Morphometric parameters of head and face

Morphometric parameters	Face size (mm)	
	men	women
n-me (face height)	125,64 ± 6,3	111,87 ± 2,26
gl – me	136,75 ± 3,29	122,34 ± 2,34
n-inc (height of naso-maxillary complex)	81,47 ± 3,52	73,45 ± 2,24
sn-inc (height of teeth-alveolar part in upper jaw)	21,82 ± 1,17	20,07 ± 1,24
n-sn	61,19 ± 2,7	58,57 ± 2,29
inc-me (height of lower jaw)	43,76 ± 3,32	41,52 ± 1,47
sn-spm (inter-gnathic gap)	55,84 ± 4,5	53,16 ± 1,54
gn – me	6,52 ± 1,29	6,02 ± 1,19
inc – spm (height of teeth-alveolar part in lower jaw)	21,96 ± 1,89	21,14 ± 1,27
zy – zy	143,57 ± 5,1	138,41 ± 3,72
sn – gn	65,46 ± 1,43	63,28 ± 2,16

Tabe 2

Morphometric parameters of head and face among patients with decompensated vertical-mesial form of increased teeth wear

Morphometric parameters	Face size (mm)	
	men	women
n-me (face height)	108,6 ± 3,11	105,26 ± 2,53
gl – me	118,3 ± 3,29	115,24 ± 2,33
n-inc (height of naso-maxillary complex)	71,53 ± 2,56	69,45 ± 2,34
sn-inc (height of teeth-alveolar part in upper jaw)	12,36 ± 2,37	11,6 ± 1,62
n-sn	52,18 ± 3,26	52,44 ± 3,54
inc-me (height of lower jaw)	36,68 ± 2,32	34,71 ± 1,47
sn-spm (inter-gnathic gap)	43,31 ± 3,65	42,51 ± 2,84
gn – me	14,96 ± 1,79	13,54 ± 1,37
inc – spm (height of teeth-alveolar part in lower jaw)	133,27 ± 6,35	131,471± 6,73
zy – zy	54,37 ± 2,16	52,56 ± 1,56

Table 3

Morphometric parameters of head and face among patients with compensated vertical-mesial form of increased teeth wear

Morphometric parameters	Face size (mm)	
	men	women
gl – me	123,31 ± 6,5	114,38 ± 2,4
n-inc (height of naso-maxillary complex)	134,15 ± 3,4	119,3 ± 2,2
sn-inc (height of teeth-alveolar part in upper jaw)	75,4 ± 3,2	72,4 ± 2,46
n-sn	17,5 ± 1,2	16,1 ± 1,4
inc-me (height of lower jaw)	59,6 ± 2,4	57,3 ± 2,7
sn-spm (inter-gnathic gap)	40,4 ± 3,2	38,2 ± 1,7
gn – me	52,5 ± 4,3	50,1 ± 1,3
inc – spm (height of teeth-alveolar part in lower jaw)	19,6 ± 1,4	18,2 ± 1,6
zy – zy	137,5 ± 6,3	133,1 ± 3,2
gl – me	56,7 ± 1,1	55,3 ± 2,8

The results of studying patients showed us that height of nasal face part (n – sn) corresponded to the lower part of face (sn – gn), and difference between these indexes formed around 1-2 mm. It is also worth mentioning that height of teeth-alveolar part of upper jaw (sn – inc) was approximately three times smaller than height of nasal face part, and did not correspond to teeth-alveolar part of lower jaw (inc – spm). Height of inter-gnathic part (sn – spm) was decreased by 8-11 mm. Thus, decrease in height of gnathic face part, especially height of lower jaw and intergnathic gap. The results of analyzing teleradiogragh in side projection have shown that among patients position of upper jaw was mesially shifted in sagittal direction. Inter-occlusion gap among patients of this group was placed in limits 4-10 mm.

The results of analyzing teleradiogragh in side projection have shown that among patients position of upper jaw usually corresponded to norm, while lower jaw was mesially shifted in sagittal direction.

The results of measuring facial skeleton among patients with compensated vertical-mesial form of increased teeth wear are presented in table 3.

The results of studying patients have shown that height of nasal face department (n – sn) corresponded to the lower face part (sn – gn), and difference between these indexes equaled about 1-3 mm. The height of teeth-alveolar part of upper jaw (sn – inc) was approximately equal to height of nasal face part and corresponded to teeth-alveolar part of lower jaw (inc – spm). The height of inter-gnathic part (sn – spm) was decreased by 3 mm. The results of analyzing teleradiograph in side projection have shown that among patients position of upper jaw was mesially shifted in sagittal direction. Inter-occlusion gap among patients of this group was within limits of 0-3 mm.

Thus, for patients with decompensated vertical-mesial form of increased teeth wear decrease in height of gnathic face part in average by 10 mm with inter-occlusion gap of 4-10 mm is typical. For patients with compensated vertical-mesial form of increased teeth wear an insignificant decreased in height of gnathic face part, especially height of lower jaw and intergnathic gap with inter-occlusion gap 0-3 mm is typical.

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