graphic activity of the masticatory muscles was studied with the electromyography interference method employing the Neuromyan electromyography, Model 4 01. The examination was focused on the activity of the masticatory, temporal and suprahyoid muscles at ground state of the lower jaw, at dentition compression, as well as at voluntary and set chewing.

Results and discussion. The electromyographic study showed coordinated activity of the masticatory muscles with no sign of spontaneous activity at rest in the comparison group. At compressed dentition, the amplitude of the biopotentials of the masticatory muscles in the central occlusion position was 599.82 ± 10.93 microvolts (μV); of the temporal ones — 425.96 ± 6.03 μV, and in the suprahyoid muscles — 394.48 ± 5.89 μV.

In patients with dentition defects complicated with distal occlusion, a comparison of the masticatory biopotentials amplitude revealed average data typical of mild, moderate and severe dysfunction. In case of a mild dysfunction, for instance, the biopotentials amplitude of the masti-catory and the temporal muscles turned to be reduced down to 548.53 ± 7.85 μV ($p < 0.001$) and 400.44 ± 4.41 μV ($p < 0.05$); at a moderate degree – to 465.59 ± 8.88 mkV ($p < 0.001$) and 358.73 ± 5.31 μV ($p < 0.001$); at a severe degree – down to 368.62 ± 10.89 μV ($p < 0.001$) and 331.89 ± 4.31 μV ($p < 0.001$), respectively. During that, the biopotentials amplitude of the suprahyoid muscles went up — to 412.21 ± 2.85 μV ($p < 0.05$) at a mild dysfunction; up to 443.56 ± 3.88 μV ($p < 0.001$) at an average degree of dysfunction, and to 470.94 ± 3.81 μV ($p < 0.001$) at a severe one. Besides, electromyograms done when the lower jaw was in the state of relative ground state (physiological rest) revealed spontaneous activity of the masticatory muscles, which reached 100 μV, while during mastication the rhythmic alteration between the bioelectrical activity and rest phases in the masticatory muscles was disturbed.

Conclusion. The above has shown that an electromyographic study performed on adult pa-tients suffering from dentition defects complicated with distal occlusion allowed revealing reduced a decrease in the biopotentials amplitude of the masticatory and temporal muscles, along with an increase in the biopotentials amplitude of the suprahyoid muscles at dentition compression. At the same time, there has been a connection identified for the biopotential amplitude of the masticatory muscles, typical of mild, moderate and severe degrees of muscular-articular dysfunctions.

REFERENCES

1. **Konnov V.V., Davydov B.N., Vedeshina E.G., Domenyuk D.A.** The morphology of the temporomandibular joint in normal occlusion and distal occlusion complicated by defects of dentitions (Part I). The Dental Institute. 2017; 74(1):92–94. (In Russ.).
2. **Konnov V.V., Davydov B.N., Vedeshina E.G., Domenyuk D.A.** The morphology of the temporomandibular joint in normal occlusion and distal occlusion complicated by defects of dentitions (Part II). The Dental Institute. 2017; 75(2): 66–69. (In Russ.).
3. **Korobkeev, A.A.** Changes in the structural elements of the temporomandibular joint with distal occlusion / A.A. Korobkeev, D.A. Domenyuk, E.G. Vedeshina, V.V. Konnov, O.Yu. Lezhnina, Ya.A. Korobkeeva // Medical news of North Caucasus. 2017. – Vol. 12. – № 1. – P. 72–76. (In Russ., English abstract). DOI: 10.14300/mnnc.2017.12020.
4. **Domenyuk D.A., Shkarin V.V., Porfyriadis M.P., Dmitrienko D.S., Dmitrienko S.V.** Algorithm for forecasting the shape and size of dental arches front part in case of their deformations and anomalies // Archiv EuroMedica, 2017. – Vol. 7. – № 2. – P. 105–110.
5. **Shkarin V.V., Porfiriadis M.P., Domenyuk D.A., Dmitrienko D.S., Dmitrienko S.V.** Setting reference points for key teeth location in case of abnormal dental arch shape //Archiv EuroMedica. – 2017. – Vol. 7. – № 2. – P. 111–117.
6. **Shkarin V.V., Domenyuk D.A., Porfiriadis M.P., Dmitrienko D.S., Dmitrienko S.V.** Mathematical and graphics simulation for individual shape of maxillary dental arch // Archiv EuroMedica, 2017. – Vol. 7. – № 1. – P. 60–65.

CLINICAL IMAGE OF TEMPOROMANDIBULAR JOINT DYSFUNCTION IN PATIENTS WITH DENTITION DEFECTS COMPLICATED WITH DISPLACED MANDIBLE

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Dentofacial anomalies and deformities, dentition defects, as well as premature occlusal contacts come accompanied with a mandibular displacement, which, in turn, leads to pathological changes of the temporomandibular joint and masticatory muscles. These changes can be of different nature and may vary in terms of their clinical manifestations, can lack symptoms or be aggravated with pain symptoms, which will affect not the dentoalveolar system alone yet also the patient's psycho-emotional status [1–6]. Given that, it appears relevant to be aware of the clinical manifestations features for temporomandibular joint dysfunctions in patients with occlusive disorders complicated with displaced mandible.

Aim. To identify the clinical symptomatology features and the severity of the temporoman-dibular joint dysfunction in patients with dentition defects complicated with the mandible displacement.

Materials and methods. A clinical examination was held involving 72 patients with dentition defects complicated with a displaced mandible. The examination implied evaluating the face symmetry; amplitude of mandibular vertical, lateral and anterior movements; the symmetry of mandibular movements at opening the mouth; the pain in the temporomandibular joint and masticatory muscles during palpation and mandibular movements; the articular noise severity when moving the mandible.

Results and discussion. Patients with dentition defects complicated with a displaced mandible, revealed a limited amplitude of maximal opening in the vertical plane in 43.1% of the cases, while the mandible movements were limited to 25–37 mm in 22.2% of the cases, with another 20.9% of the cases having it below 25 mm. The mandible movements in the horizontal plane were limited in 45.8% of the cases; 30.5% had it limited down to 5–9 mm was, with 15.3% of the cases having the same value below 5 mm. The limited amplitude of the mandible anterior movement was observed in 36.1% of the patients, while in another 25% of the patients the limit was down to 3-5 mm, and in 11.1% of the patients — below 3 mm. Opening of the mouth was accompanied with a change in the mandible movements symmetry of the in 90.3% of the cases — the deviation was 55.6%, while the deflection accounted for 34.7% of the cases.

Pain sensations in the temporomandibular joint at mandibular movements were registered in 15.3% of the patients. Masticatory muscles produced pain at movement in 31.9% of the cases. The functional test performed through pressing the patient's chin backwards proved positive in 34.7% of the cases, offering another 23.6% when pressed from the side. 20.8% of the patients reported sense of pain at palpation of the temporomandibular joint, whereas similar sensations were recorded in 40.3% of the cases at palpation of the masticatory muscles. The muscle activity asymmetry during compression of the jaws at the conventional occlusion was noted in 23.6% of the patients. The temporomandibular joint auscultation and palpation helped identify the joint noise pathology in 88.9% of the patients.

Conclusion. Given the observations abovementioned, an examination of patients with dentition defects complicated with a displaced mandible, revealed signs of temporomandibular joint dysfunction in 97.3% of the cases. At the same time, 30.6% of the patients said had a mild degree of dysfunction; moderate dysfunction was detected in 43.1% of them, while in 23.6% of those examined the dysfunction could be described as severe.

REFERENCES

1. **Konnov V.V., Davydov B.N., Vedeshina E.G., Domenyuk D.A.** The morphology of the temporomandibular joint in normal occlusion and distal occlusion complicated by defects of dentitions (Part I). The Dental Institute. 2017; 74(1):92–94. (In Russ.).
2. **Konnov V.V., Davydov B.N., Vedeshina E.G., Domenyuk D.A.** The morphology of the temporomandibular joint in normal occlusion and distal occlusion complicated by defects of dentitions (Part II). The Dental Institute. 2017; 75(2): 66–69. (In Russ.).
3. **Korobkeev, A.A.** Changes in the structural elements of the temporomandibular joint with distal occlusion / A.A. Korobkeev, D.A. Domenyuk, E.G. Vedeshina, V.V. Konnov, O.Yu. Lezhnina, Ya.A. Korobkeeva // Medical news of North Caucasus. 2017. – Vol. 12. – No 1. – P. 72–76. (In Russ., English abstract). DOI: 10.14300/mnnc.2017.12020.
4. **Domenyuk D.A., Shkarin V.V., Porfyriadis M.P., Dmitrienko D.S., Dmitrienko S.V.** Algorithm for forecasting the shape and size of dental arches front part in case of their deformations and anomalies // Archiv EuroMedica, 2017. – T. 7. – No 2. – P. 105–110.
5. **Shkarin V.V., Porfiriadis M.P., Domenyuk D.A., Dmitrienko D.S., Dmitrienko S.V.** Setting reference points for key teeth location in case of abnormal dental arch shape //Archiv EuroMedica. – 2017. – Vol. 7. – No 2. – P. 111–117.
6. **Shkarin V.V., Domenyuk D.A., Porfiriadis M.P., Dmitrienko D.S., Dmitrienko S.V.** Mathematical and graphics simulation for individual shape of maxillary dental arch // Archiv EuroMedica, 2017. – Vol. 7. – No 1. – P. 60–65.