

ASSESSMENTKA OF THE DEGREE OF IMPAIRED ADAPTATION OF THE NERVOUS SYSTEM IN CHILDREN WITH LOWER JAW DEFORMITIES

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Abstract. *This article highlights ways to determine the response of the nervous system to external and internal influences in children with lower jaw deformity, as well as ways to determine the degree of violation of this adaptation. The results of biochemical and enzyme-linked immunosorbent assays to determine the quality of life and anxiety levels in children with lower jaw deformities are presented.*

Keywords: *autonomic nervous system (ANS), lower jaw deformities, children, hypoxia.*

Relevance: The type and degree of development of jaw deformities in children, according to the world literature, depend on the cause, duration of the process, the state of jaw growth processes and the body as a whole. However, we have not found information in the literature about the role of the functional state of the nervous system, gastrointestinal tract, and hemostasis system in the development of jaw deformities in children with physical development delay. Therefore, we considered it necessary to study the clinical and neurological characteristics and autonomic disorders in children with defects and deformities of the lower jaw, which affect the processes of jaw growth, metabolic processes in general, which plays a major role in the formation of protective, compensatory-adaptive and adaptive capabilities, in the overall physical development of the child. It should be noted, that with this pathology, all the bones of the face are deformed with a violation of the functions of the nervous system, the process of chewing, breathing, speech, in the digestive organs, in general, the harmonious development of the child, often with early disability. The work of M. A. Shilova and co-authors revealed that vascular dysplastic changes occur in any localization, but the most pronounced changes are found in the aorta, coronary and cerebral vessels. Among the topical issues of modern pediatric neurology, dentistry and pediatrics, the problem of complex diagnostics and treatment of children with defects and deformities of the jaws after injuries, inflammatory and destructive processes, anomalies of the development of the jaw bones, especially the lower jaw, occurring against the background of diseases of the respiratory, digestive, nervous and excretory systems, which represent a large group of controlled diseases, is of great importance. and unmanageable risk factors for the development of dysmetabolic syndrome.

In dynamic processes, risk factors are of great importance, this is that during the development of the disease, risk factors change and pathogenetic processes change. It is important

to know that the close relationship between the autonomic and cardiovascular systems and the pathogenesis of connective tissue dysplasia makes it very important and relevant to study them in children with jaw deformities caused by the pathology of the temporomandibular joint associated with connective tissue dysplasia (DCT). It is also important when planning treatment and predicting outcomes.

In the existing sources PubMed, Scopus, Web of Science, we did not find information about the state of the autonomic nervous system, their relationship with internal organs and systems in children with jaw deformities caused by TMJ pathology.

The aim of the study: was to assess the degree of impaired adaptation of the nervous system in children with lower jaw deformities.

Material and methods: for the evaluation of selected patients and studies were carried out in the clinics of children's maxillofacial surgery GSI, TashPMI clinic, together with the staff of the Tashkent City Medical Center of the Diagnostic Center and the Central Diagnostic Laboratory of the multidisciplinary clinic TMA.

During the material collection, 108 children were examined, the main group consisted of 78 (87.6%) children with defects and deformities of the jaws, the control group consisted of 30 practically healthy children. In the main group, 47 (60.2%) children had post-traumatic secondary deforming osteoarthritis of the temporomandibular joint (TMJ) and 31 (39.7%) children had post destructive chronic osteomyelitis. In the distribution of patients by gender, a significant number were girls-41 (52.5%), respectively, 37(47.4%) - boys. Based on the etiology within the main group, the children were divided into the following subgroups: 1 group of a secondary deforming osteoarthritis of the temporomandibular joint (TMJ VDO) after injury (28) patients, 2 group-TMJ VDO after chronic destructive osteomyelitis (complete restriction of the movement of the lf) (50) patients. All the subjects required surgical intervention to correct facial structure and mouth opening disorders. The control groups consisted of 30 practically healthy children without any TMJ diseases.

The study used the method of multicomponent examination of patients, which included anamnestic, clinical and neurological studies with examinations of a pediatrician, gastroenterologist, endocrinologist, nephrologist, geneticist and other specialists. Phenomena of quality of life (QOL) were carried out using specialized questionnaires Pediatric Quality of Life Inventory-PedsQLTM4.0. The presented questionnaires have 23 questions and consist of chapters, which are designed for certain age groups such as from 5 to 7 years, from 8 to 12 years and even their parents. The maximum available score is 100 and the number of points characterizes the quality of life of the respondents.

And immune and biochemical methods of blood and saliva testing with the determination of HIF-1a, protein S-100, L-Lactic acid, lactate dehydrogenase (LDG).

HIF-1aa is a subunit of a heterodimeric transcription factor, in a state of hypoxia in which the need for oxygen significantly exceeds its available concentration in the body and a complex response is triggered that leads to changes in cellular metabolism, the S-100 protein is a group of calcium-binding proteins, the protein content increases in the initial stages of the development of chronic brain ischemia and reflects neurodegeneration processes, L-lactic acid is a product of anaerobic metabolism, which causes acidosis in the body and is a real danger to the body, LDG is one of the main enzymes of glycolysis, which catalyzes the oxidation of L-lactate to pyruvate and if there is enough oxygen in the cells, ATP is formed from pyruvic acid, and if the same amount

of oxygen is present in the cells, oxygen is not enough pyruvic acid is converted to lactate and this is a precursor to hypoxia and a violation of cellular metabolism.

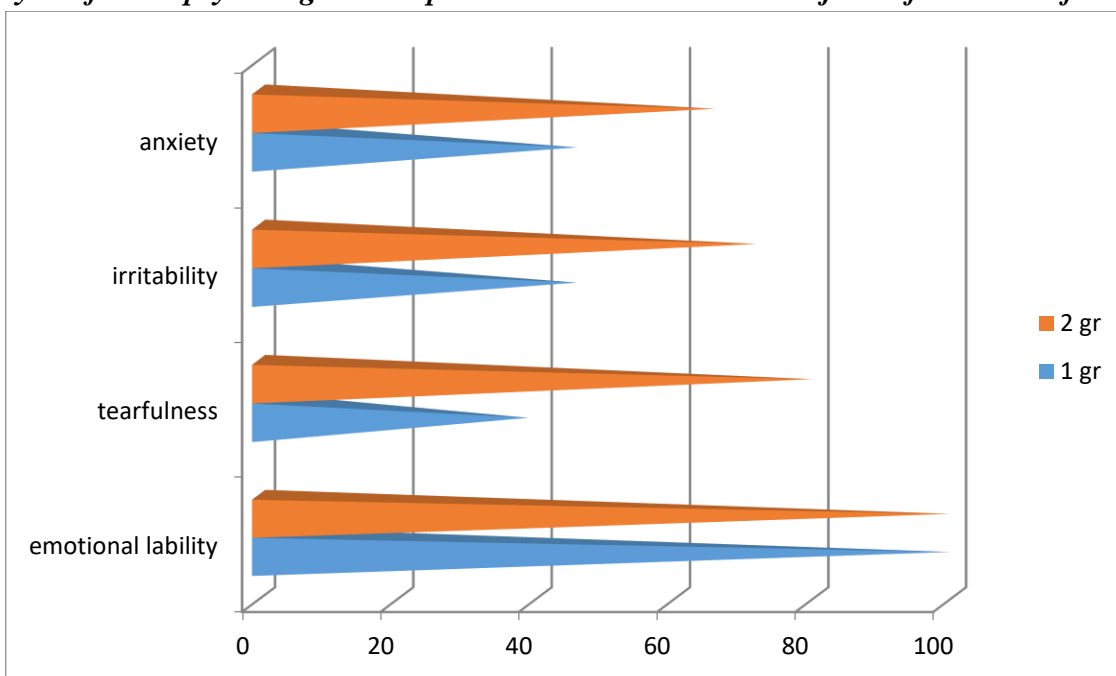
Results of the study: children of the main group with defects and deformities of the jaws of various etiologies were accompanied by: facial asymmetry (78;100%), micrognathia (14;17.94%), deviation of the lower jaw (41;52.5%), restriction in the movement of the jaws (opening the mouth) - (41;52.5%).

All children of the main group and their parents complained of rapid fatigue and meteorological stability (78;100%), emotional lability (78;100%), irritability (69;88.5%), tearfulness(51;65.38%), anxiety in behavior (46;59%), y in (42nasal;53.8%) breathing difficulties, diffuse headaches in 42 (2.39.6%) children, pain in the thoracic and lumbar spine(47;60.2%), sleep disorders (72;92.3%), hyperthermia of the palms and feet (42;53.8%) were noted 53.8% abdominal pain (50;56.4%) the presence of pain with heaviness in the right hypochondrium with nausea(45; 58.9%), stool retention followed by diarrhea (21;25.6%).

In the study of neurological status, there were scattered microsymptomatics in the form of facial asymmetry due to defects and deformities of the jaw (78;100%), central paresis of the 7th pair of TBI (30;38.4%), and tongue deviation (45;57.6%). In the motor sphere, there was a revival of tendon reflexes (78;100%), muscle hypotension (73;93.5%), when studying coordination tests in the Romberg pose, staggering with tremor of the fingers and eyelids was noted (71;92.01%). In the study of the vegetative nervous system, marbling of the skin (78;100%), cold extremities (69;88.46%), hyperhidrosis (42;53.8%), hypersalivation (49;62.8%) were noted. Clinical manifestations of astenoneurotic syndrome were observed in 92.3% of patients in the main group of patients.

Chart 1

Analysis of neuropsychological complaints in children with lower jaw defects and deformities



The final indicators of skin signs in children with defects and deformities of the lower jaw indicate violations of the autonomic nervous system in the form of a hypersympathicotonic response.

Chart 2

Results a comparative study of vegetative support

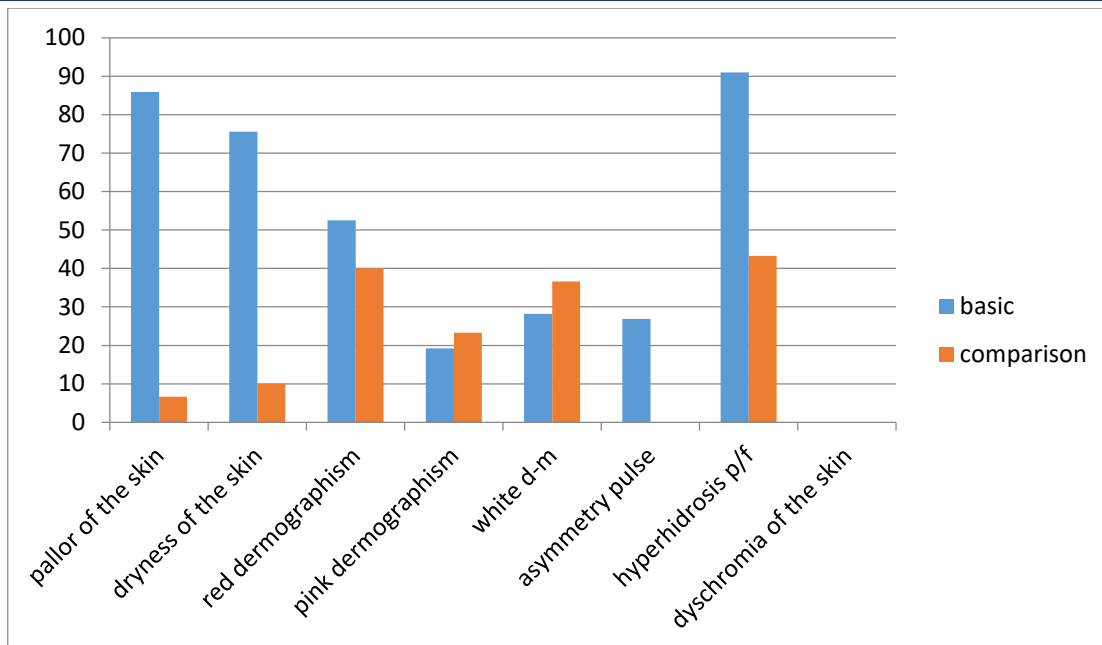
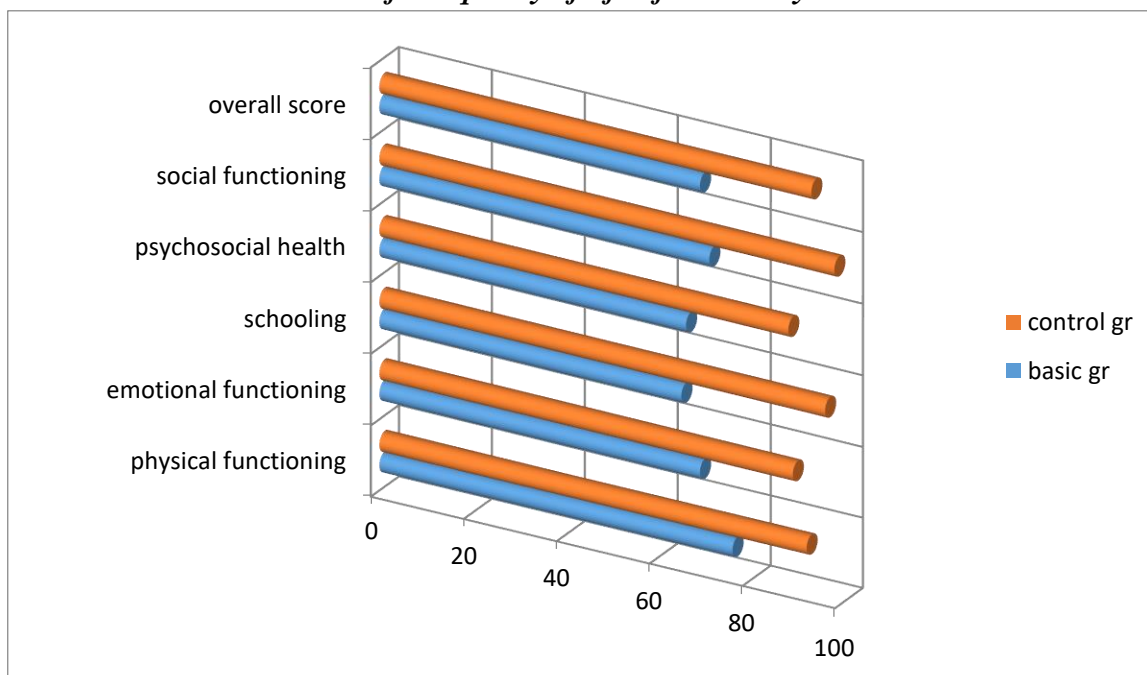


Figure 3

Assessment of the quality of life of the surveyed children



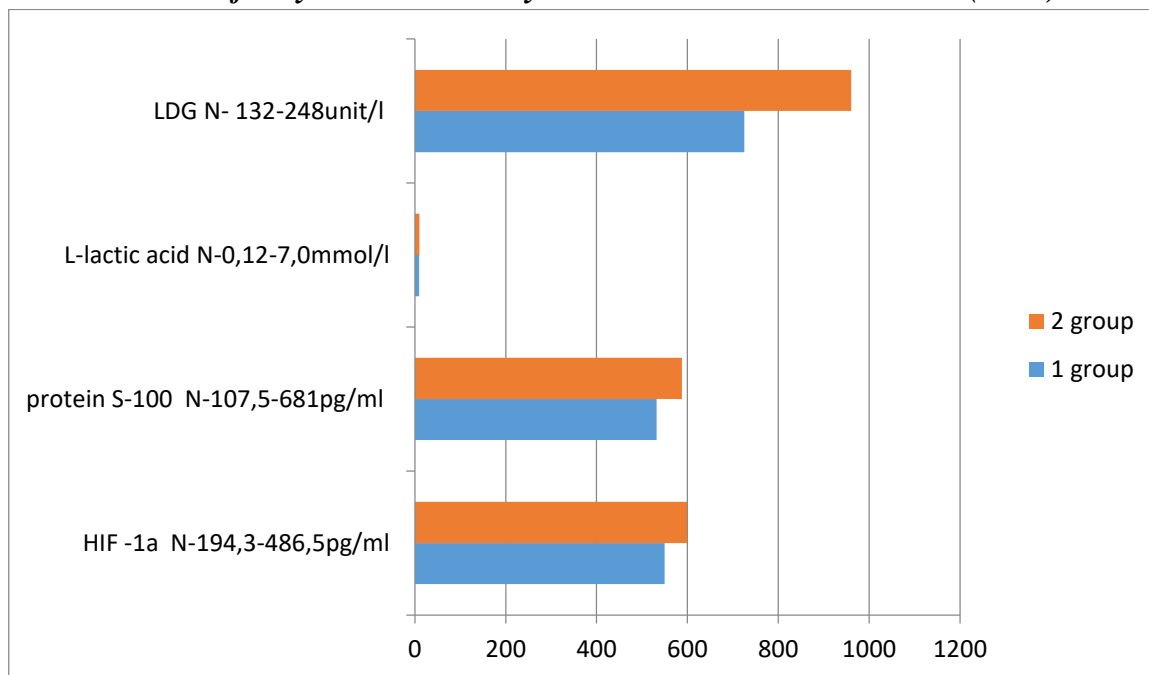
During the study of the quality of life in children according to the questionnaire, we see a decrease in the quality of life in children with lower jaw pathology, the average score in children with the above-mentioned pathologies was 69.52, and in children of the control group there were higher scores.

According to the results of enzyme immunoassay and biochemical blood tests, there was an increase in the level of HIF-1a in group 1 in 11 (39.2%) children and in group 2 in 32 (64%) children with severe deformities of the lower jaw, higher indicators, S-100 protein in group 1 in 8 (28.57%) children were increased and in group 2, 34(68%) children also reached high levels, the level of L-Lactic acid was increased in group 1 in 15 (53.57%) children, and in group 2-in 38 (76%), LDG is also present in group 1 in 16(57.1%) children, but it is more pronounced in group

2-in 35 (70%) children, which confirms the relationship between the severity of lower jaw deformity and increased markers of hypoxia and metabolic disorders.

Diagram 4

Results of enzyme immunoassay and biochemical blood tests (n=63)



Conclusions

The results of the study showed that diagnostic and practical approaches to assessing maladaptive conditions in the case of changes in the structure of the jaws due to trauma, as well as pathologies of a destructive nature of an inflammatory nature with localization in the temporomandibular joint negatively affect somatic and vegetative status.

Defects and deformities of the lower jaw in children are accompanied and aggravated by dysplastic syndrome, quantitative and qualitative changes that occur in this case can be regarded as violations of the body's systemic adaptation to external and internal fluctuations, which lead to instability to various diseases, end with the development of pronounced complications and this is quite seriously reflected in the quality of life in children.

To assess the genesis and severity of endogenous intoxication and hypoxia, it is necessary to determine the formation of lactate, S-100 proteins, and hypoxia factor HIF-1a in the blood. The results are taken into account when drawing up a program of complete or auxiliary detoxification therapy, correction of gastrointestinal disorders, correction of disorders of the nervous system, especially the autonomic department.

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