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CLINICAL AND NEUROLOGICAL FEATURES OF TRIGEMINAL NEUROPATHY WITH OPTIMISATION OF THERAPY IN THE ELDERLY

Machanov G.Sh.
Djurabekova A.T.
Niyozov Sh.T.
Department of Neurology
Samarkand State Medical University

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Abstract:

Neuralgia is a secondary pathology that occurs in people over 65 years of age and arises against the background of primary diseases such as osteoporosis, osteochondrosis. According to the World Health Organization, the incidence is 2-4 people per 10 thousand people. Among all common types of the disease is trigeminal neuralgia, accompanied by severe toothache and headache, with patients unable to speak and difficulty chewing.

Keywords: elderly age, neurology, trigeminal nerve

INTRODUCTION. In the elderly age NTN proceeds rather severely (1, 5, 9). The duration of pathology from the beginning of the disease debut, hold for months and even years, accompanied by sleep disorders, weight loss, exacerbation of diseases of cardiovascular, digestive systems, in a word, worsen the quality of life, affect the emotional state. Fear of provoking neuralgic paroxysm forces elderly patients to chew only with the healthy half of the mouth, which leads to the formation of seals in the muscles of the contralateral part of the face. According to the literature, there are several theories explaining the relationship between local demyelination and the occurrence of hyperexcitation focus (4, 8, 12). In the first one, the ability of transverse interaxonal transmission of impulses is noted, in the second, pathological afferent impulsation becomes the cause of damage to the trigeminal nuclei of the cerebral trunk, and in the third theory at the site of the lesion, axon regeneration goes in the opposite direction (E.V.Balyazina, 2014). Many studies by foreign authors using modern neuroimaging methods indicate signs of NTN, which were not previously detected in a large part of people who have never suffered from facial pain (3, 7, 11). Thus, according to MRA magnetic resonance angiography, such frequency is determined within the range from 10 to 30%, but the prevalence of NTN is 5 per 100,000 population per year, or 0.005%. It means that on average only 9 people out of a thousand have typical NTN. Consequently, the interest to the pathomechanism of NTN widespread in the population in the unfolded clinic of the disease is actual and undoubtedly of scientific interest (2, 6, 10). The problem of NTN is the most debatable among specialists, disputes about the role of neurovascular imbalance in pathogenesis have increased interest in classical NTN, researchers have begun to study the size of the canals and openings through which the branches of the trigeminal nerve pass: round and oval openings, suborbital and mandibular canals, supraorbital, suborbital and subchondral openings, the size, volume, diameter have been studied (Shchedrenok V. V. et al. 2013; Sepahdari A.R., Mong S., 2013; Kavitha Kamath B., Vasantha K., 2014; Liu P. et al., 2016; Mohebbi A. et al., 2016). Russian researchers, note the fact that at the age of over 50 years, there is inevitably a violation of the root, both trophic structure, and the degree of vulnerability under the influence of compression inevitable with age (Afanasyeva EV 2008). At the same time, it is very relevant in connection with the aging of the population and the increasing proportion of elderly and senile people in the general structure of patients of outpatient and polyclinic treatment and preventive care facilities and specialised clinics of multidisciplinary hospitals. In this direction, continued research V.V.Shchedrenok (2012-2014) and his colleagues found that the narrowing of the suborbital orifice is the cause of NTN, considering this factor as a pathogenetic basis for the narrowing of the orifices from which nerve branches emerge in the development of NTN. The study, determination of optimisation of NTN therapy, was prompted by the research of Isakhanov T.A. (2018), where it is indicated that the tunnel component formed in the round, oval and suborbital foramen due to osteoporosis may be one of the existing risk factors for the development of the disease. All of the above made it necessary to conduct this clinical study.

PURPOSE OF THE STUDY. To study the peculiarities of the course and to improve the effectiveness of treatment of trigeminal neuritis in people of the older age group.

MATERIAL AND METHODS OF RESEARCH. In the study, 100 patients over 60 years old, who applied to

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the Department of Neurology of the Multidisciplinary Clinic of Samarkand State Medical University (Samarkand) for the period of 2022-2024, the ratio of women / men corresponded to 3/1, the basis for hospitalisation of patients was a complaint of pain in the face area. For the purity of the study, 23 healthy volunteers (not experiencing pain in the face area) of identical age and sex were selected as a control group. The mean age of the patients was 63.6±2.9 years. The duration of the disease was (according to anamnesis) from 1 month to 9 years, with men accounting for 58% and women 42%. The patients of the main group (100) were diagnosed with trigeminal neurology, according to the international classification of headache (3rd edition, 2013). In addition to the basic standard questioning and examination by a neurologist, the patients underwent a thorough examination by an ophthalmologist, otolaryngologist, dentist, and therapist. Additionally, all examined patients were diagnosed for the level of pain syndrome, where the intensity of pain and the nature of pain were assessed using the VASH scale and the LEADS scale. Additionally, the study included all the examined, neuroimaging of the brain and skull (CT/MRI), vascular TCDG, osteodensitometry method, determination of microelements in blood analysis (calcium). Statistical processing was carried out on an individual computer, with the inclusion of standard programmes of information processing and traditional application of the estimated method of reliability according to Student's criteria.

RESULT OF THE STUDY. In the examined patients of the main group the peculiarity of facial pain appeared polymorphic. The average duration of pain ranged from several hours a day to 3 (4) months, the duration of the disease from the beginning of the debut of the first attack ranged from 1 month to 9 years (with periodic breaks in the form of remissions). Questioning patients about the cause of onset and what provoked the pain, patients could not clearly identify the factors influencing the disease, in 20% of cases were associated with hypothermia (prolonged exposure to air conditioning, open window in the car cabin). In almost all cases, the pain syndrome was sudden, of the 'dagger pain' type or similar to an 'electric shock'. Painful sensations accompanied the patients during the day, intensified during jaw movement (talking, eating), but as noted by the patients, the peak of pain intensity was in the evening and at night. During the examination, the main common trigger zones were identified, where most of the trigger zones (33%, 34%) were located in the eye socket, upper lips (28.2%, 27.6%), cheek area (17.4%, 16.8%), the remaining areas were the lower border. The result of the literature search, notes the peculiarities of age-related changes in NTN, as a consequence of decreased vascular elasticity due to atherosclerosis, or age-related thickening of vessel walls, increasing their tortuosity. Single sources of scientific research indicate the process of osteoporosis in the bone structure, age-related, which increases the modification of the nerve outlets and cause NTN due to its pressure on the root of the trigeminal nerve, thus provoking an attack of pain. The intensity of pain and was 7 to 9 points on the VAS scale. In 50% of cases the examined patients felt pain only when 'pressing' on the trigeminal nerve exit points. In the area along the trajectory of trigeminal nerve exit points the pain sign was observed as follows: in 62% it was the upper zygomatic area, in 10% of cases it was the area around the nose. It should be noted that in almost all patients there was a 'fear' of touching the painful points. In this connection, it became necessary to study pain assessment with the help of the LEADS questionnaire, where emotional disturbances are manifested at the initial position. Thus, according to the LEADS questionnaire, the sensory register of pain intensity had a limit of 4.2±2.1, and the total register of pain intensity was 22±4.5. As mentioned above, in old age, vascular factor may affect multiple abnormalities, accordingly, TCDG study to assess arterial anatomical characteristics, permeability and quantitative blood flow parameters was essential. Dopplerometric parameters obtained from both groups (main and control) of patients with NTN showed that the informative index of the level of cerebrovascular reactivity and blood flow velocity decrease in intracranial segments of the VMA on the side of the lesion without changes and there was no significant difference in the analysed parameters between the groups.

Table1
Cerebrovascular reactivity and blood flow velocity in NTN

Main group	58,1±0,6	1,05±0,14	0,62±0,13	46,5±0,4	1,06±0,12	0,56±0,12
Control group	56,0±1,8	1,01±0,12	0,53±0,12	47,5±0,8	0,88±0,10	0,52±0,12

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As a result of the complex examination of NTN patients by the analysis of bilateral Doppler monitoring, data on the nature and functional state of the cerebral hemispheres and the main cerebral vessels, no pathological changes in the mechanisms of cerebral blood circulation control were found, which allowed us to obtain information that in the patients included in the study (the main group), neurovascular imbalance was not a pathological factor in the development of NTN.

Brain MRI data revealed during the examination and diagnosis were indicative. Thus, the diameter of the right side of F.supraorbitalis, the first branch of VTN, in the main group was 0.19±0.08 cm, where in the control group - 0.34±0.06 cm. There was found a difference between NTN patients of the main group in the diameter of the round hole, with a 2-fold decrease in comparison with the healthy control group. Practically the same indicators on the level of the left F.supraorbitalis diameter, where in the main group it was 0.18±0.07 cm, in the control group - 0.34±0.05 cm, respectively, the diameter of the orifice is 1.5 times less than in the control group. The level of the index of the right side diameter of F.infraorbitalis, the second branch of TH , in the main group was 0,28±0,09 cm, in the control group - 0,37±0,07 cm, respectively, which on the average is the difference of 0,09 cm, that is less than in the norm. The left diameter of F. infraorbitalis was 0.28±0.09 cm in the main group, and 0.38±0.07 cm in the control group, which on the average is a difference of 0.09 cm, that is less than the norm. The next branch, the diameter of the right side of the canal from which the third branch of the TH, F. mentalis, exits, was 0.28±0.07 cm in the main group, and 0.35±0.05 cm in the control group. As can be seen, the diameter of the orifice decreased on average by 0.07 cm in NTN patients of the main group compared to the healthy control group. The diameter on the left side of F. mentalis was 0.30±0.08 cm in the main group and 0.36±0.05 cm in the control group, respectively, where the mean difference between the orifice diameter was 0.06 cm, which is different from the normative diameter size. Thus, the method of neuroimaging (MRI diagnostics) allowed us to determine the degree of age-related deformations and the level of the trigeminal nerve outlet diameter size, which allows us to consider this method of investigation as a pathognomonic sign. This method indicates age-related dysfunction of the bone structure, which prompts further research, studying the signs of osteoporosis, directly calcium indices in the blood and by densitometry.

Based on the above analysis of the results, it was found that osteoporosis is more frequent in women than in men, which is directly related to physiological conditions and metabolic changes in the body of women over 50 years of age.

The result of densitometry demonstrates the level of osteoporosis in the groups: the average level of T-index was 3.07±0.2 in the patients of the main group, while in the control group it was 1.81±0.27, thus potentially indicating the prevalence of increased osteoporosis in the main group. The parallel study of laboratory parameters on blood calcium level in the comparative groups confirmed the assumption and revealed a reliable increase of calcium in the main group, where the previous study determined a high level of osteoporosis, which, in turn, is another evidence that osteoporosis should be considered as a risk factor for NTN of people in the older age category. On the basis of the obtained results, the patients of the main group were treated and the effectiveness of chondroprotectors (bioregulatory therapy) in the complex treatment of patients with NTN was analysed, taking into account the nature of the variables of influence on NTN recurrences. The main group of patients was divided into two subgroups, the first (1-54 patients) of which received standard treatment (in accordance with the standards of treatment of NTN of the Republic of Uzbekistan), the second (2-46 patients), in the complex traditional treatment, additionally used chondroprotector (Alflutop 2 mil v/m every other day for 3 months). In the divided subgroups, the level of the trigeminal nerve branch canal exit diameter was calculated after repeated MRI study.

The therapeutic approach showed positive dynamics, so the diameter on the right side of the canal of F. supraorbitalis, from which the first branch of TN exits, changed from 0.19±0.08 cm to 0.25±0.07 cm in patients of the 2nd subgroup, in the 1st subgroup group this index remained unchanged at the level of 0.19±0.08, while in the control group this index was 0.34±0.06 cm, i.e. the treatment brought the indexes closer to relatively normal (of healthy people without NTN), which were relied on during the study. It should be noted that in patients of the 2nd subgroup after treatment, the results changed in a positive direction, not only in the form of increase (enlargement) of the round hole, but also from the side, which is considered to be the most important for patients, there were no recurrences of pain syndrome attacks, compared to the 1st subgroup, where the indicators remained unchanged. The diameter on the left side of F.

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supraorbitalis after treatment changed from 0.18±0.07 cm to 0.25±0.07 cm in the 2nd subgroup, at the same time in the 1st subgroup of comparison the value did not change, which once again indicates the effectiveness of the therapeutic measure in the 2nd subgroup, where the level of the orifice diameter in NTN patients changed positively in the form of increase (enlargement), while in the comparison subgroup the results remained unchanged.

The positive result after the therapy was noted, on the side of the diameter of the right side of the F.infraorbitalis canal, the second branch of the TH, where the increase was found by 0.05 cm, from 0.28±0.09 cm to 0.33±0.08 cm in the 2nd subgroup and remain unchanged 0.30±0.08 cm in the 1st subgroup. The left-sided diameter of F.infraorbitalis increased from 0.28±0.09 cm to 0.33±0.08 cm in subgroup 2, whereas the index remained unchanged at 0.33±0.09 cm in the comparison group.

The result of pain assessment using the LEADS questionnaire revealed the following data after treatment: the initial level of LEADS scale was 21,91±0,64, after treatment in the patients of the 2nd subgroup was equal to 10,44±0,34, in the 1st subgroup the initial level was equal to 20,44±0,36 and after treatment had almost no reliable result. Dynamics of the study by densitometry method, after complex treatment in the 2nd subgroup, indicates a good result, where the results have the following indices: the initial level of T-index was 3,46±0,2 in the patients of the 2nd subgroup, after the conducted optemising therapy, the results changed reliably 2,12 +_ 0,2 , in the 1st subgroup - initial data 3,1±0,16 and after treatment had data within 3,0±0,3.

CONCLUSIONS: Thus, trigeminal neuralgia is difficult not only to diagnose, but also to treat because of side effects and complications, especially in people of older age category, taking into account comorbid background, taking additional medications. Among modern methods of differentiated diagnostics neuroimaging (MRI) is widely used, and the main tasks of MRI are to exclude tumours, cysts, demyelinating process, inflammatory diseases, cerebrovascular disorders, developmental anomalies. The study of bone canals of cranial nerves and the level of diameter of exit apertures is also important for understanding the etiopathogenesis and pathomechanism of trigeminal neuralgia in older people and especially for optimising further treatment tactics. In this regard, the task of management of patients with NTN, the correctness of diagnosis, compliance with the rules of control of comorbid (secondary) background of the disease according to the results of analysis, clinical examination and data of methods of additional research, in particular MRI, optimisation of drug therapy, it is important not only to reduce and manage the pain syndrome, but also to achieve complete remission.

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