Clinical and Pathogenetic Features of Trigeminal Neuralgia in the Elderly and Old Age

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ABSTRACT

Neuralgia of the trigeminal nerve is characterized by severe painful attacks, the mechanism of formation of which is described in numerous literary sources, where the authors describe various pathogenetic concepts with the development of treatment methods. This work is no exception, the study was conducted on the basis of a private clinic, studying the clinical and pathogenetic aspects in elderly and senile patients, observing the stage of diagnosis; laboratory and instrumental parameters were studied, where the deformation of the trigeminal nerve orifices by osteoporosis was proved. The cause itself was determined to be compression-tunnel; optimization of treatment with chondroprotective drugs showed high positive results

Keywords: trigeminal neuralgia, elderly and old age, treatment diagnosis

Introduction. There are descriptions of trigeminal neuralgia since Hippocrates and Galen (1,3,4). According to the WHO, trigeminal neuralgia is a fairly common disease, with an incidence of between 5-6 cases per 100,000 people. The main component of the disease is a pain attack (often on one side). Many literature sources describe the mechanism of trigeminal neuralgia (NTN), with varying opinions, with some believing the cause is due to hypothermia, while others link this with an infection, or an existing one. The majority of researchers believe that there is compression of the nerve at the pontine node (2, 6), resulting in ischaemia of the trigeminal nerve system. A slightly different cause is presented by researchers studying the anatomical structure of the bite or age-related bone changes that irritate the nerve and lead to pain syndrome (5, 7). Stepanenko (2019) points out, in his work, that 6% of disorders are associated with plaque compression in the background of multiple sclerosis. According to Melrack R., the gateway theory; in which as the myelinated fibres decrease, the impact on the spinal trigeminal nuclei increases, thereby increasing the pain threshold. Several authors have gone further, and have put forward their hypothesis about the consequence of an autoimmune process, linking a stomatological procedure of intervention, after which trigeminal neurology develops. The authors studied antibody titres to the myelin basic protein, proving the demyelination process. In addition, the occurrence of NTN in the elderly tends to be explained by a vascular factor, atherosclerotic or by the pathological shape of the vessels compressing the nerve root (8, 9). Practice shows that there is a need for further investigation of NTN in the elderly and elderly, as according to a literature review, more than 65% of pain syndrome in NTN, occurs in people between 60 and 70 years of age. The relevance is related to another factor; patients of this age,

of 70%, only 10% are treated by a neurologist, indicating a lack of awareness and the need to optimise treatment tactics.

Objective of the study. To study trigeminal neurology in the elderly and elderly, clinical and pathogenetic features, with the development of a modern approach to diagnosis and treatment.

Materials and research method. The research was carried out in the private clinic of Samarkand in the amount of 40 patients of elderly and senile age (from 60 to 75 years) with trigeminal neurology for the period of 2020-2022. The inclusion criteria, in addition to age and trigeminal pain syndrome, were compliance with an algorithm (Boston algorithm), where the detection of trigeminal NTNs on one side was accompanied by an absence of sensory disturbances on the other side. The gender difference was 3:1, with a higher proportion of women. Exclusion criteria were patients younger than 60 years of age, patients with comorbid background, diabetes mellitus, tumors (of the pontineal area in particular), post-traumatic changes, consequences of surgery in the trigeminal nerve projection area.

All patients underwent a standard clinical and neurological examination, MRI examination of the brain, more to clarify the age-related deformity of the skull shape, on the MRT-SignaExporer(2020).

Computer angiography of the brain was performed in several cases; ultrasound transcranial dopplerography of the brachiocephalic vessels in several cases. Laboratory blood tests for blood calcium (Ca) ionisation (normal 1.16-1.32 mmol/l), (solid-phase chemiluminescence immunoassay method). Densitometry - in order to determine bone density and the presence of osteoporosis (this method was examined at SAFOTIBBIYOT private clinic) in all patients. Treatment was described in the results of the study. Statistical data was assessed using an individual computer, with standardised Stuadent indices.

Study results. The reason for treatment was pain in the face, in a particular point, unilateral pain described by the patients as "kenjal" or electric shock. Duration of pain did not exceed two minutes on average, with a frequency of every half hour or one hour. The duration of the condition varied for all, with 3 people suffering in this position for several days, taking pain medication and patiently waiting for the situation to change for the better on its own. 7 people underwent a long phase of treatment by a dentist, an oral surgeon, with partial time progression, and came forward with an exacerbation of the process. Most of the patients had already consulted a neurologist, and were treated as outpatients, remission was said to last for almost a year, there were 13 such patients; the remaining patients used non-traditional medical methods for pain relief - acupuncture, leeches, lotions, phytotherapy; in these cases remission lasted from 2 to 4 months.

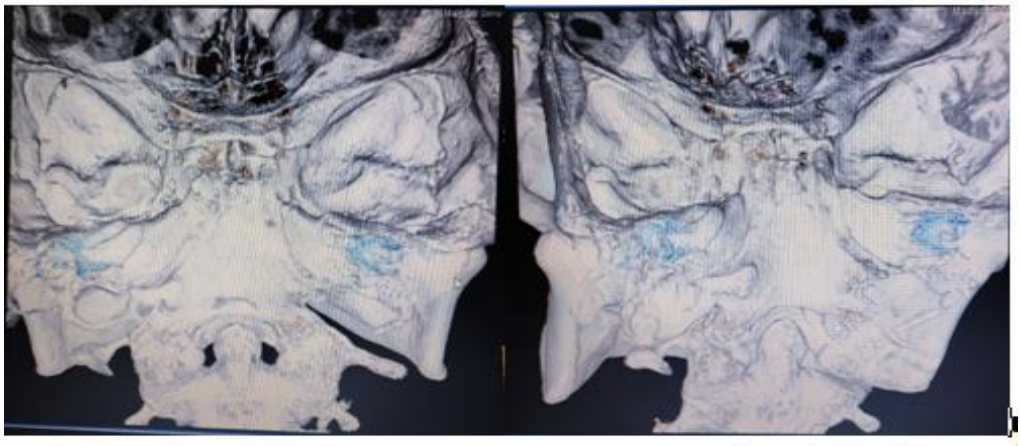

Figure 1. Patient Z. Neuralgia of the trigeminal nerve with localisation of pain in the area of the second branch. Circumferential opening on the right 0.9 mm, on the left 1.1 mm

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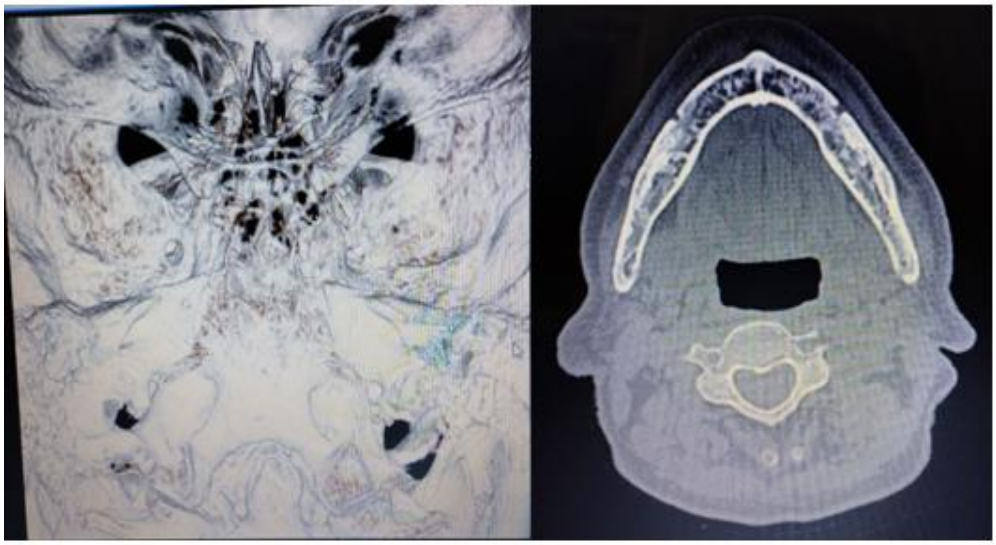

Fig. 2. Patient D. trigeminal neuralgia with localisation of pain in the area of the second branch. Circumferential opening before treatment on the right 0.7 mm, on the left 1.1 mm. After treatment, circular opening on the right 1.0 mm, on the left 1.4 mm

In accordance with the set objectives, the study of pain syndrome in elderly and senile patients with NTN, in addition to the analysis of clinical and neurological examination, additional research methods were conducted. In addition to the above-mentioned demineralizing processes in the CNS and peripheral nervous system, it is assumed that there is a tunnel syndrome due to age-related changes in the skull bone itself, against the background of osteoporosis, which is typical for this age group. The first step in this direction was to check the laboratory values for the quality of ionised calcium (cation), which is independent of the protein in the blood, allowing it to be used as a criterion of calcium metabolism for the detection of osteoporosis.

The analysis for ionised calcium was carried out in the morning (as calcium values are higher in the evening); it turned out that all the examined patients had low values of ionised calcium below one, with an average value corresponding to 0.8±0.1 mmol/l; this suggests a precondition for osteoporosis at an

older age. The next step in confirming osteoporosis was a direct examination on an apparatus, dexitometry, to study bone density, a diagnostic method that allows early subclinical signs of osteoporosis to be identified. After the age of 50, bone fragility increases, due to thinning, turns into "porous bone"; osteoporosis affects the entire skeleton. The causes of osteoporosis are numerous, the underlying cause is a metabolic disorder, it is peculiar to every person, but in some people the process is quite intense (7, 6). Quantitative ultrasound densitometry (QEDM) was used (patients were warned beforehand not to take calcium preparations 24 hours in advance). The important indicators of the examination, T- and Z-score, the T-score (normal 1) in the examined patients was on the average 2.3±1.0, which serves to diagnose osteoporosis; as for Z-score the figures were consistent with the age-related indices.

Figure 3. Patient D. trigeminal neuralgia with localisation of pain in the area of the second branch. Upper jaw aperture before treatment on the right 0.6 mm, on the left 0.5 mm. After treatment, the opening on the right was 1.1 mm, on the left 0.9 mm

According to many scientists, MRI examination of patients with NTN is an important component to differentiate the diagnosis, pure or classic NTN, from secondary compression, e.g. by a tumour. In our cases, the interest of MRI examination is, in addition to the above, the study of bone structure, or rather deformity, in elderly and senile patients with a background of proven osteoporosis. Computer angiography was performed in the vertical plane, crossing the trigeminal nerve root at the level of the lateral part of the pontomesencephalic segment. The method itself had a 3 D drawing.

Data analysis was performed with the correlation of the sides (affected or diseased side with the healthy side), mainly purposefully examining the size of the canal orifice. Out of 40 patients, 17 patients underwent this examination (with their written consent and the consent of their relatives, taking into account the age category of the patients). On the basis of this study, a narrowing of the subglacial canal was detected, which is most likely due to thickening of the walls due to age-related deformities with osteoporosis, or to excessive osteogenesis. This fact confirms the origin of NTN as compression-tunnelian (or as compression neuropathy). The size of the oval foramen ovale was also already larger on the diseased side compared to the healthy side. For tunnel syndrome, the shape and size of the cranial foramen is important, according to age. In the elderly and old age it is difficult to judge the normal size of the canal format, hence the healthy side has changes like the affected side, but less pronounced. Foreign authors, describe an age-related difference in canal diameter, with the round opening being much narrower in adolescence than in adults. Therefore, only

the sides of one (individual) patient were taken for a comparative analysis. A study of 17 patients, found a difference in the diameter of the cranial nerve foramen on the sides. As mentioned above, the lesion was mainly on the right side, of the patients examined they were 15; the diameter volume on the right side was 4.5±0.5 mm2, and on the left 4.8±0.5 mm2, in the area of the round hole; in the area of the orifice on the right 5.4±0.5 mm2, on the left 6.3±0.5 mm2, that is the side of lesion clearly showed narrowing, due to bone deformation, exacerbated by osteoporosis. Thus, CT angiography is a sufficiently informative method for NTN.

Without stopping there, given the variety of therapies that have been proposed, the search for a new therapy remains relevant according to the literature. Previously proposed treatment regimens complement each other and are mainly aimed at relieving pain syndrome. Taking into account the carried out diagnostic research, there is a necessity of decompression effect, and as analysis shows, treatment of not less important factor as osteoporosis, by the preparation of chondroprotective action, Aflutop - component of concentrate from small sea fish, containing mucopolysaccharide peptides, amino acids, microelements; it stimulates process of interstitial tissue and cartilage tissue restoration, thereby has analgesic properties. Dosing regimen, 2ml every other day, 10-12 injections per course; advantage of the drug, reduced need for NSAIDs (important for the elderly). Patients were divided into two groups, the first of which remained on traditional treatment (the standard proposed by Russian colleagues in 2009), where treatment in the first phase involved pre-hospital administration of carbamazepine, followed by inpatient therapy with the addition of corticosteroids, Milgamm, lipoic acid. The second group of patients received Aflutop as described above. Group 1 consisted of 18 patients out of 40 treated with conventional medication, Group 2 consisted of 16 patients out of 40 treated with Aflutop. Taking into consideration the long course of Afluton, the patients were examined twice, after 2 weeks for the first examination and again after 6 months. The result of the treatment of patients at the first examination showed effectiveness in both groups, almost the same position, according to the HACS scale, the intensity of pain decreased, approaching the normal range. In Group I, 5 patients did not continue treatment, refusing to take the drugs (injections) due to the fact that the pain had resolved. In group II, the patients had less pain, but the pain was not completely gone, and several patients questioned the appropriateness of the treatment regimen. Drug remission was therefore predominant in Group 1. Six months later follow-up examination revealed the opposite. Group 1 patients were asking for help several times during this period as the painful attacks recurred and earlier medicines didn't work so far, it was difficult to correct them and apply blockades (corticosteroids combined with lidocaine), NSAIDs etc.. At the same time group 2 patients reported complete remission in 89%, the rest did not apply for help, but they had fear of recurrence of painful attack, patients pressed the area of the trigeminal nerve outlet and felt unpleasant feeling, but the attacks which had taken place at the first application did not occur in the whole group 2. Thus, the proposed conservative treatment of patients with NTN in the elderly and old age revealed a high percentage of effectiveness, in addition, the patients admitted that in addition to facial pain, before the treatment, they felt pain in the joints and spine, and after the proposed treatment, the pain decreased, and 6 patients had no symptoms during the entire period of examination. Of course, it was not the aim of the study to analyse the efficacy of Aflutop therapy for joint pain, but the sufficiently proven positive result allowed us to describe the nature of Aflutop, which solved two problems simultaneously.

Conclusions: Thus, we had the task to study the features of NTN in elderly and senile patients, the study revealed that NTN is quite common pathology characteristic of this age category, in addition, the duration of the disease varies from one year to several years,

remission is short or long (up to 1 year), the right half of the face suffers more often, the most pronounced pain points in the oval and round hole: examination of patients for calcium ionization and calcium quantitative Proposed therapy with Aflutop has shown positive results, both as an analgesic drug that reduces the use of NSAIDs and as a drug that creates complete remission in elderly and elderly patients with NTN.

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