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Information about authors

Badasyan Armen Nersesovich, Assistant of the Department of Surgical Diseases of the Faculty of Postgraduate Education Amur State Medical Academy (Blagoveshchensk); +79098107551, Arm_bad@mail.ru;

Olifirova Olga Stepanovna, Head of the Department of Surgical Diseases of the Faculty of Postgraduate Education Amur State Medical Academy (Blagoveshchensk);

Sergieevich Alexander Alexandrovich, head of biomedical laboratory SHIKS FENU (Vladivostok); +79046285362, Altexes@mail.ru, sergievich.aa@dvfu.ru.

I. S. Pinelis, Yu. I. Pinelis, M. A. Katman, I. D. Ushnitsky

TRAUMATIC NEUROPATHY OF THE SECOND BRANCH OF THE TRIGEMINAL NERVE

ABSTRACT

This research describes the etiology, possible pathogenesis, symptoms and treatment of neuritis of the second branch of the trigeminal nerve which resulted from traumatic damage or postoperative period. To some extent it is bound to the fact that during the last period there are patients with inflammation of the second branch of trigeminal nerve after maxillary sinusotomy, periostitis operation and teethpreserving operations of the upper jaw, especially in the anterior area. At the same time, there are cases of injury of peripheral nerves of the second branch of trigeminal nerve at endodontic treatment of caries complications due to deduction of filling material for the tooth apex in bone tissues and genyantrum. As a rule, the neuritis of the second branch of trigeminal nerve is followed by pain, numbness, paresthesia and sensitivity disorder in the upper lip, lower eyelid, upper cheek part, teeth of the upper jaw, Highmore's sinus, lateral area of the face, etc. Sometimes patients with postoperative or posttraumatic neuropathy of the second branch of trigeminal nerve are taken for simulators or patients with unhealthy state of mind as a clinical picture is rather poor. The desquamation of mucosa epithelium, friability and gingiva bleeding, etc. that indicated trophic frustration in innervation zone take place in the long neuropathy course among some patients.

Authors suggested a complex treatment of this pathology. At the same time the standard treatment of neuritis begins with elimination of the cause of illness: stopping of local inflammatory process, removal of filling material from periapical area, etc. Meanwhile, at this pathology the main thing was weakening or the complete elimination influence of the scar tissue shrouding the nervous trunk (compression, trophy disorder, etc.). Glucocorticosteroid drugs were injected into tissues around the scar on the transitory fold of the upper jaw and also medicinal electrophoresis was done on the scar area. Non- narcotic analgetics were administered for pains. According to indications patients received antihistamine medicines, tranquilizers, neuroleptics, antidepressants, etc additionally. At the same time it was established that the earlier treatment of young scars began, the more successful was therapy of postoperative neuritis.

The research results have testified its effectiveness.

Keywords: neuritis of the second branch of trigeminal nerve, etiology, pathogenesis, symptoms, treatment.

INTRODUCTION

According to ICD-10 the neuritis of trigeminal nerve heads a group of diseases of this pair of craniocerebral nerves. The neuritis of trigeminal nerve is a disease of inflammatory character which af-

fects branches of trigeminal nerve. It is shown by the severe paroxysmal pain in innervation zones and considerably reduces quality of life of the patient.

There are not so many causes of inflammation of trigeminal nerve. Often

the neuritis of trigeminal nerve appears as a result of the postponed infectious diseases (meningitis, tuberculosis, flu, syphilis, herpetic infection), frost, trauma, toxic influence, and also can be provoked by inflammatory diseases of teeth

and gums, various processes in sinuses (Highmore's sinus, frontal sinus) [1, 3, 6].

Meanwhile in recent years there are patients with inflammation of the second branch of trigeminal nerve after maxillary sinusotomy, periostitis opening and teeth-preserving operations on the upper jaw, especially in the frontal area. Besides, cases of injury of peripheral nerves of the second branch of trigeminal nerve by filling material which passed through the root channel and removed for the tooth apex in bone tissues and genyantrum [2, 4] became frequent. As a result of such injuries, the main, but alveolar branches of trigeminal nerve are more often to be affected. The inflammation of the second branch of trigeminal nerve there are some pathological symptoms (pain, numbness, paresthesias and sensitivity disorder) in the upper lip, lower eyelid, upper cheek area, teeth of the upper jaw, Highmore's sinus, sites of lateral area of the face, etc.

In our opinion, the main mechanism of development of neuropathy of frontal, middle and back branches of maxillary nerve is formation of the cicatricial block in the postoperative and posttraumatic period (a compression of nervous tissues by scar). Feature of this pathology is that the clinical picture is shown not at once but only 6 - 12 months later after operation or trauma. In this regard the patient or the doctor cannot always establish a cause [5].

Purpose of the study: based on the evaluation of complex treatment of second branch of the trigeminal nerve traumatic neuropathy to develop recommendations to improve its treatment.

MATERIALS AND METHODS

We've observed 22 patients with the diagnosis postoperative neuritis of the second branch of trigeminal nerve for 10 years in dental clinic of Chita medical academy. The age of patients varied from 39 to 57 years old. Most of them were females (81.8%). The affection depended on the place of operation or endodontic treatment, injuring, etc.

CLINICAL PICTURE

Most of patients complained of the constant, periodically amplifying, painful thermalgias, numbness zones or paresthesia of the respective areas of skin of the upper lip, cheek, infraorbital area, sidewall of nose, teeth, gums, face skin. The anamnesis of disease established that 10 patients underwent radical maxillary sinusotomy in the intra oral way, 4 – earlier were treated concerning a subnasal fracture of the upper jaw, 5 – made peristomy in the frontal teeth; and 3 – after a resection of the roots apex of the upper premolar teeth. Almost all patients noted the above described complaints in 4-6 months after the trauma and medical procedures of mucosa of alveolar process of the upper jaw of the relevant side.

From the case history it was revealed that the accompanying chronic pathology could not become the cause of the disease or affect the course of neuropathy.

Clinical picture of postoperative or posttraumatic neuropathy of the second branch of trigeminal nerve was rather poor. In this regard such patients are taken sometimes for simulators or for persons with unhealthy mentality. We noted the following clinical symptoms of local examination. The palpation in infraorbital nerve area was poorly morbid, decrease in sensitivity of skin was noted. In the oral cavity there is the postoperative scar which is localized in the upper alveolar process of the upper jaw. Patients have the desquamation of mucosaepithelium, friability and gingiva bleeding, etc. that indicated trophic frustration in innervation zone during the long course of neuropathy. Additional research techniques (radiological, elektroodontometry, etc.) were little informative.

TREATMENT

Treatment of neuritis depends on the cause of illness: stopping of local inflammatory process, removal of filling material from periapical area, etc. However at this pathology the main thing was weakening or the complete elimination influence of the cicatricial tissue shrouding a nervous trunk (compression, trophic disorder, etc.). 10–40 mg/ml of Kenalog or Diprosan was injected into tissues around the scar on the transitory fold of the upper jaw for this purpose. Depending on effectiveness of influence of medicine the quantity of injections could reach 5 times. Besides, 10 sessions of electrophoresis of 5000 units of heparin were administered to area of the scar, 10-15 sessions of phonophoresis with Contractubex ointment or 3000 IU gel of Longidaza. Non-narcotic analgetics to removal of pains (Aspirinum 0,25-0,5 g 3-4 times a day, Analginum 0,5 2-3 times a day, Sedalginum 1 tablet 3 times a day, Ibuprofenum 0,2 g in the morning before meal and 3 times a day after meal, etc.). Additionally patients received antihistamine medicines, tranquilizers, neuroleptics, antidepressants, etc. according to indications.

Decrease or the complete removal of pains, restitution of sensitivity of skin, mucosa and teeth of the upper jaw was the main efficiency factor of complex treatment. Meanwhile it should be noted, the neuritis caused by "young" scars (3-9 months) almost completely underwent an involution under the influence of corticosteroids and physiotherapeutic therapy. In this place there was the weak hazy and little sinking down scar. Other patients had under the influence of corticosteroids and immunotherapy regress of "aged" scars reached 60-75%.

We give a clinical example for the il-

lustration.

The patient K., 56 years old consulted to Chita medical academy clinic with complaints to the pains in right infraorbital area, irradiation of the teeth of the upper jaw, lip, nose wing intensifying at meal, washing and speaking. The anamnesis found out that the patient was operated about 5 years ago by radical maxillary sinusotomy intra oral access» for chronic odontogenous right antritis. These complaints appeared one year ago. He consulted neuropathologist who diagnosed neuralgia of 2 branch of trigeminal nerve and administered anticonvulsant therapy by Finlepsin. The improvement did not occur after the carried-out treatment. The objective examination has revealed that the face configuration didn't change, palpation of exit point of right infraorbital nerve was little painful, and at the left – painless. Trigger points were not found. The mouth opens well. The painful thick fixed 5 cm scar was determined by the transitory fold of alveolar process of the upper jaw in the right area. The mucosa around it was slightly edematous, the teeth percussion of upper jaw in the right – painless. The X-ray of maxillary sinus cavity didn't show any bone changes. The diagnosis was postoperative neuropathy of the second branch of trigeminal nerve in the right. 10 injections of 2% Lidocaine were prescribed as infraorbital anesthesia in the right. The patient felt minor improvement after the course of blocks, but complaints renewed after 1 month. Therefore patient was injected 3 injections of 40 mg of Kenalog in the scar zone on the upper jaw with the interval of 3 weeks and a course of vitamin therapy. The scar became weaker, painless and mobile after these procedures. At the same time the patient noted almost complete cessation of pains. The patient's pain was absent during control examination in 6 months and the palpation of postoperative scar was painless.

CONCLUSION

The therapy of postoperative neuritis of the second branch of trigeminal nerve at all variety of treatment methods demands individual approach taking into account disease duration. Our experience demonstrated that the most efficient is the complex treatment consisting of pathogenetically reasonable methods. Besides, the obtained data once again confirmed the fact that the earlier treatment of young scars begins, the more successful is the therapy of postoperative neuritis.

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Information about authors:

Pinelis Iosif Semenovitch, Doctor of Medical Science, professor, head of the department of surgical odontology of Chita state medical academy, Chita, Russia. Tel. (83022) 315-918. E-mail: pinelis1@mail.ru;

Pinelis Yury Iosifovitch, Doctor of Medical Science, professor of department of surgical odontology of Chita state medical academy, Chita, Russia. Tel. (83022) 315-918. E-mail: pinelism1@mail.ru;

Katman Maria Aleksandrovna - Candidate of Medical Science, assistant of department of surgical odontology of Chita state medical academy, Chita, Russia. katman_mariya@mail.ru;

Ushnitsky Innokenty Dmitrievitch, Doctor of Medical Science, professor, head of the department of therapeutic, surgical, orthopedic odontology and odontology of children's age "North-Eastern Federal University named after M. K. Ammosov", Yakutsk, Russia, incadim@mail.ru.

ARCTIC MEDICINE

M. P. Lebedev, K. N. Bolshev, V.A. Ivanov, M. I. Tomsy, A. S. Andreev

MONITORING OF THE SWIMMERS' BODY TEMPERATURE DURING A SWIM ACROSS THE BERING STRAIT

ABSTRACT

The authors reported data on temperature changes in the stomach and on the wrists of the two swimmers during swim across the Bering Strait in conditions of extremely low water temperature (3 °C to 6 °C), as well as in the preliminary swim across the river Lena in more favorable conditions. The continuous measurement of the body of the swimmers' temperature was done using a thermologger iBDL DS1922L, which, having a small size and a non-volatile memory can be placed directly inside of the object. The minimum temperature in the stomachs of swimmers during swim across the Bering Strait was fixed at 27 °C. Measurement of body temperature in extreme environmental conditions can help to study the limit of an organism and to fight with the effects of hypothermia.

Keywords: human body temperature, thermologgers, hypothermia.

The study of a human body reaction, when exposed to low temperatures, is important for the development of medicine in the field of determining the limit abilities of the body. Conduction of such research is accompanied by difficulties of either a purely technical nature or dangers posed by low temperatures to the body of unprepared person. The sensors with sufficient compactness, accuracy and independence are necessary to continuously monitor the temperature of different parts of the body.

The abilities of the trained athletes which are accustomed to extreme cold conditions present particular interest. In nineteen eighty seventh, the American athlete Lynn Cox set a record, swimming for 2 hours and 6 minutes in water of 6 degrees Celsius and covering four thousand one hundred sixty meters of the Bering Strait. Her record was beaten by our fellow countrymen: a unique event was held in August twenty fourteen -

swim across the Bering Strait from Little Diomed Island (US) to Ratmanov Island (Russian Federation) (Fig.1). The participants, extreme swimmers Prokopchuk Gregory (from Yakutsk, Russia) and Alexander Brylin (from Blagoveshchensk, Russia) swam almost 5.5 kilometers in water with the temperature of 3 to 6 degrees Celsius for 2 hours.

The route of the swim from the island of Big Diomed to Little Diomed.

The swimmers' body temperature was monitored throughout the swim. The iBDL temperature loggers were chosen as the main tool. iBDL stands for iButton Data Loggers and represents a family of recorders (loggers), commercially produced by the American company Maxim Semiconductors. They are designed to monitor the temperature and humidity. iBDL is a miniature device, which is completely self-contained and secure single-channel electronic recorder. Each device comprises a semiconductor temperature

sensor, a real time clock, a non-volatile memory, a microprocessor and a lithium power supply in a MicroCAN sealed steel casing weighing 3.3 g with a diameter of 17 mm (Fig.2). iBDL recorders have an IP56 degree of protection against moisture and dust. This allows the use of these devices in a variety of environments without additional insulation. Due

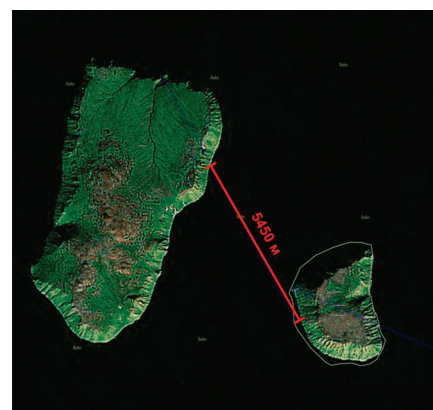


Fig.1. The route of the swim