AETIOLOGY AND PATHOGENESIS OF THE TOXIC NEURITIS OF THE INFERIOR ALVEOLAR NERVE BASED ON THE CLINICAL AND LABORATORY DATA

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Introduction. Neuritis is a nerve injury (E.V. Borovskiy, N.S. Zhohova, 1997; A.A. Mihaylenko, 2009; I.O. Pohodenko-Chudakova, E.A. Avdeeva, 2010) morphologically expressed in the nerve trunk of inflammatory aetiology which are characterized by interstitia damage, medullary sheath and axon what is peculiar to the toxic injury of the inferior alveolar nerve as well (V.V. Zobatcheva, L.A. Goreva, 2008; S.V. Sirak, A.A. Mihaylenko, A.B. Hodzayan, 2009).

Study objectives of examination was find out the main aetiological factors which determine development of the toxic injury of the inferior alveolar nerve and particularities of the pathogenesis of this pathological process.

Methods and material. Object of examination were results of the experiment performed on 2 series of laboratory animals. The model of the traumatic injury of the inferior alveolar nerve was made in the first series. At the second series, we realized the toxic influence by the filling materials based on the paraformaldehyde on he nerve trunk. We evaluated the macroscopic changes of the inferior alveolar nerve on the following days: 3, 7, 14, 21, 28 days, 1,5 months, 2, 2,5, 3, 4, 5 and 6 months.

Aetiological factors of the neuritis of the inferior alveolar nerve development according to the special literature data, should be divided into common and local ones. Common factors are: infection agent influence, intoxication and metabolism desorders or combination of those factors. Local factors should be divided into some groups: local inflammatory processes; traumatic injury of the nerve trunk (during the fracture of the skull base, lower jaw fractures, resection of the mandible, cystectomy, complex and atypical tooth extraction on the mandidle, resection of the root apex of the mandible, injury made by a needle during the block anesthesia on the mandible, implantation).

The factor of the toxic development of the injury of the inferior alveolar nerve is a chemical substance influence which components are aggressive for the nerve tissue and is used for root canals filling but in condition that the filling material is moving out of the root canal into the tissue surrounding the mandibular canal or its entering into the mandibular canal as well as the influence of the local anesthetics.

Results. According to the results that we received during the examination, the toxic injury of the inferior alveolar nerve is developing during the more earlier terms and macroscopic morphological changes have more expressed character than during the traumatic injury. When comparing according to the terms of examination, animals of the first series with model of the traumatic neuritis of the inferior alveolar nerve by the 7 day have degenerate changes of the nerve trunk. The expressed signs of trauma become visible in one month and later. The second series of the experimental animals the signs of the nerve truck destruction are

visible by the 3 day and the signs of trauma become evident and authentic by the 21 day.

In the first series of experimental animals were observed development of inflammatory processes in the bone of the mandible, as well as in surrounding admaxillary soft tissues. In the second series at the time of observation over 21 days indicated the presence of osteomyelitis, which was complicated by the spread of infection in the submandibular and submental region with the development of abscesses.

In our opinion, the pathogenesis of neuritis due to cardiovascular and metabolic changes in the nerve, manifested a significant decrease in the excitability of myelinated nerve fibers, resulting in the early period (up to 20 days) to a breach of the anatomical integrity of the nerve, which according to the L.A. Grigoryantz, S.V. Sirak (2006) is characterized by swelling, accompanied by a bundle of nerve trunks, by initiating a gap epineurium and perinevriya with placental abruption, massive hemorrhage and the development of inflammation. Blood cells infiltrate the peripheral part of the nerve trunks, aggravating inflammation and epineurium perinevriya accumulation of cellular detritus. As a result, compression at the cross section revealed degenerative changes in the structure of nerve fibers. Established that the filling materials used in the endodontic treatment, in contact with nervous tissue causes irreversible pathological changes in it in the form of necrosis.

Thus, during injection of endodontic cements in the mandibular canal which is one of the possible complications during dental treatment for complications of dental caries, there is not only compression of the nerve trunk of this material, but, above all, realize its toxic effect on nerve tissue. In addition, in the literature there is evidence that the adherence of the infectious agent to this pathological process promotes the development of osteomyelitis of the jaw bone (G. Colella et al., 1999; O.V. Shalak, 2000).

Conclusion. Traumatic nature of the agent has a direct influence on the course neuritis of ht inferior alveolar nerve. Toxic damage of the inferior alveolar nerve on the modern stage has a poor prognosis in terms of development of persistent pain of the maxillofacial area and the development of purulent-inflammatory process, which tends to worsen over time, necessitating the development and introduction of fundamentally new tactics of medical rehabilitation of patients in this category.