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CLINICAL CASE OF ACUTE GANGRENOUS MEDIASTITIS

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Annotation. *The purpose of the study was analyzed the case of a patient M. admitted to the department of thoracic surgery in connection with a diagnosis confirmed by MRI: gangrenous mediastinitis, in which the pathway of the purulent contents from the mandibular apparatus was completely and accurately described (1 molar left) with a lesion of the periosteum, further into the posterior-pharyngeal space and through the anatomical intercellular spaces of the neck to the mediastinum for 4 days. Thus we observed the pathway of the spread of the purulent inflammatory process from teeth of the lower jaw to the mediastinum cavity as a consequence of infraction of asepsis (ules therefore a patient M. who had been operated twice and had clinical death was discharged from the department of the hospital with positive dynamics.*

Key words: *the mandibular apparatus, dental apparatus, mediastinum, mediastinal organs, gangrenous mediastinitis, molars.*

The work is a fragment of scientific developments of the Department of Clinical Anatomy, Anatomy and Operative Surgery of the State Institution “Dniropetrovsk State Medical Academy on the topic”: “Morphogenesis of organs and systems of the human body and experimental animals in ontogenesis in normal conditions and under the influence of external factors” (state registration number: 0IIIIV009598).

Purulent inflammatory processes on the face affect the skin (furuncle, carbuncle), parotid gland (purulent parotiditis), paranasal sinuses (purulent sinusitis, frontal sinusitis, ethmoiditis, sphenoiditis), and the teeth are most often infected from the organs of the oral cavity (pulpitis, periodontitis), gums (gingivitis, subgingival abscesses) and tonsils (sore throats, quinsy). To take into consideration the dental apparatus, it is known that the infection often goes to the jaw (periostitis, osteomyelitis of the jaws) [1, 5].

Transition of infection from the tooth to the jaw can lead to the development of infiltration which squeezes arteries passing into the bones. This is especially true for the lower jaw where the lower alveolar artery passes, accompanied by lymphatic vessels and the infection from the teeth spreads through them [12].

The compression of the arteries by infiltration leads to a drastic malnutrition of the jaw and necrosis of the bone area followed by the formation of sequestrs. Since the cellular tissue of the intermaxillary region at the top reaches the subaponeurotic cellulose of the temporal region so that it can also be involved in the purulent process during suppurations of the maxillary region. In the future, the formation of swelling on the cheek is possible since the fiber surrounding the site of attachment of the temporal muscle reaches the fatty body of the cheek. Spreading posteriorly, suppuration in the cellular tissue of the

intermaxillary region can reach the bed of the parotid gland and thus give a reason to suspect a patient with a deep abscess of the parotid gland. As V. F. Yasenetsky showed for the first time, the suppuration of the cellular tissue of the temporal-pterygoid interval can pass to the dura mater along the way of the middle meningeal artery or the branches of the trigeminal nerve (through the orifice in the large wings of the sphenoid bone, through the spinous, oval, or circular openings) [14]. Although the tissue of the intermaxillary region with other cellular or fascial spaces of the face and neck is not directly connected and, particularly, the inner pterygoid muscle separates it from the parapharyngeal space which is often infected with lesions of the seventh and eighth teeth of the lower jaw and interstitial slits [8, 9, 11].

The transfer of a purulent process from this gap to the parapharyngeal space is possible either due to secondary infection of the parotid space or through the lymphatic ducts. Inflammation of the parapharyngeal fiber leads to the symptoms such as have difficulties in swallowing, and in severe cases, difficulties in breathing. If an infection from the anterior part of the oropharyngeal space penetrates into the posterior (destruction of the stylopharyngeal aponeurosis), then its further spread can occur through the neurovascular space of the neck in the anterior mediastinum, and when the infection passes into the posterior-pharyngeal space, its further spread can occur along the esophagus into the posterior mediastinum. There are also cases of the transition of a purulent process from the parapharyngeal space to the parotid gland through its pharyngeal process; as a result purulent parotiditis develops. At a lesion of the lower molars, the infection passes more often through the lymphatic ducts [10, 13]. The submandibular nodes and the surrounding tissue (submandibular adeno-phlegmon) are primarily involved. Hence it appears that the infection can spread in the neurovascular space through the lymphatic vessels. If pus in the submandibular phlegmon destroys the deep plate of the second cervical fascia, its further spread can proceed in two directions: either to the bottom of the oral cavity through the cellular tissue accompanying the duct of the submandibular gland which passes into the slit-like between the muscles of the mylohyoid and hyoid-lingual, or from the fiber of the space, formed by the three muscles such as genioglossal, geniohyoideus and hyoglossal, to the parapharyngeal space [1, 7].

If the purulent process reaches the posterior part of the parapharyngeal space itself, then there is a danger of necrosis of the wall of the internal carotid artery, followed by severe bleeding or the development of septic thrombosis of the internal jugular vein. A purulent process that develops in the parotid gland (parotid space) may cause paralysis of the facial nerve or severe bleeding from vessels which were destroyed with pus which pass through the gland (external carotid artery, internal jaw vein, which drains blood from the pterygoid plexus). Along the veins, the suppurative process in the parotid gland can pass into the inter-winged space. If the process passes through the pharyngeal process of the gland to the fiber of the parapharyngeal space, the walls of large blood vessels (internal carotid artery, internal jugular vein) can be affected. Along these vessels, the purulent process may spread upward into the cavity of the skull or down to the neck, and from there to the anterior mediastinum (pic.1). The rupture of pus at purulent parotitis

can also occur in the external auditory meatus through the slits among the cartilages that form the cartilage auditory meatus [4].

The reverse cases are clinically observed - the transition to the parotid gland of the purulent process with the defeat lesion of the external auditory meatus. Phlegmons of neck can be superficial and deep. The superficial phlegmons develop in the subcutaneous tissue and the deep ones are most often the complications of purulent lymphadenitis when the loose tissue around nodes (adenophlegmon) is involved in the process .

The cause of cervical lymphadenitis can be primary inflammatory lesions of skin of the face, oral cavity and nasopharynx (for example sore throats, periostitis) or common infectious diseases such as erysipelas, typhoid. Typical places for the formation of abscesses and phlegmon of the neck are: 1 - the submandibular space, 2 - supra-sternal space and the vagina of the cleidomastoid muscles, 3 - the choroid fissure, 4 - the superior visceral space and 5 - the retrovisceral space. The most common phlegmons are submandibular and choroid fissure. Submandibular phlegmons most often develop as a result of the spread of infection from carious teeth and the affected periosteum of the gum to the submandibular lymph nodes.

The purpose of the study was analyzed the case of a patient M. admitted to the department of thoracic surgery in connection with a diagnosis confirmed by MRI.

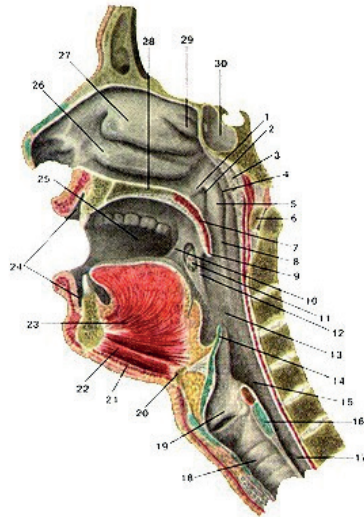
Material and methods: patient's history, laboratory and instrumental methods of research.

Results and Discussion. We analyzed the case of a patient M. admitted to the department of thoracic surgery in connection with a diagnosis confirmed by MRI: gangrenous mediastinitis, in which the pathway of the purulent contents from the mandibular apparatus was completely and accurately described (1 molar left) with a lesion of the periosteum, further into the posterior-pharyngeal space and through the anatomical intercellular spaces of the neck to the mediastinum for 4 days [3, 6].

Patient M. applied to the hospital from September 12 to September 13, 2015 (from Saturday to Sunday) with acute toothache. As a result of the examination and sanitation of the oral cavity, the lower 6th tooth (the first molar) on the left was removed and the patient was sent home. September 13 (Sunday) in 2015 as a result of the spread of purulent inflammatory process in the submandibular region - submandibular lymph nodes there was an increase in the area of the projection of the parotid gland to the left and behind the retroauricular region.

Palpation was determined dense formation, not welded to the subcutaneous fat, hyperemia and the change in skin temperature in this area was not determined. Consulted by an infectious disease specialist on September 14 (Monday), who did not rule out epidparotitis and again by a specialist in the dental department, after consulting with which he prescribed anti-inflammatory nonsteroidal medicine nimesil and to reduce the pain syndrome ketanof, as well as a therapeutic profile doctor, after which he was prescribed detoxification, antibacterial therapy, hormonal, anti-inflammatory therapy, intravenous infusion, intramuscular injections and repository preparations, as well as an x-ray of the jaw and teeth apparatus [2]. On the second day after intensive drug therapy,

a subjective sensation of relief appeared, according to the patient. Laboratory methods of the study – GBA (general blood analysis), urinalysis and glucose were recommended. The patient took blood on the 15th of September, 2015 (Tuesday). In general, the analysis of blood ESR 72 mm / hour expressed leukocytosis with neutrophilic shift to the left. Considering clinical indicators the patient is directed to CT.



Picture 1. Saggital head and neck cut.

- 1 – the tubular fold;
- 2 – the pharyngeal opening of auditory tube;
- 3 – the pharyngeal tonsil (adenoid);
- 4 – the pharyngeal pocket;
- 5 – the tube roller;
- 6 – the front arc of atlanta ;
- 7 – the soft palate;
- 8 – the pharyngeal fold;
- 9 – the uvula;
- 10 –the palatoglossal arch;
- 11 – the palatine tonsil;
- 12 – the palatopharyngeal arch;
- 13 - the oropharynx;
- 14 – the epiglottis ;
- 15 – the laryngeal pharynx;
- 16 – the cricoid cartilage;
- 17 – the oesophagus;
- 18 – the trachea;
- 19 – the laryngeal cavity;

- 20 – the hypoglossal bone;
- 21 - mylohyoideus m.;
- 22 – the geniohypoglossus m.;
- 23 – the genioglossus m.;
- 24 – the oral vestibule m.;
- 25 – the oral cavity proper;
- 26 - the inferior nasal conchae;
- 27 - the middle nasal conchae;
- 28 – the hard palate;
- 29 – the superior nasal conchae;
- 30 – the sphenoidal sinus.

CT scan of the chest cavity: Full name - Boychuk MT. No. 4483. Date of research 17.09.2015, slice thickness 0.5 mm; EED-2mSv. In the left parts of the lower jaw there is a small defect in the outer compact plate for up to 4 mm. In the soft tissues of the neck, along the whole length from the level of the larynx, multiple gas accumulations are determined both in the prevertebral space and on both sides, symmetrically under the nival muscles, where there is especially a lot of gas, and along the vascular bundles. There is a gas in the region of the floor of the mouth, the chin-tongue muscle. All tissues are swollen because of what anatomical structures do not differentiate. The process goes through the interfascial spaces in the mediastinum, where gas is determined along all main arteries and trachea. Then it spreads along the anterior and posterior mediastinum to the diaphragm along the heart and esophagus. In its course, there is infiltration of the tissue of the posterior mediastinum, and in the anterior one there is more pronounced accumulation of fluid, more to the right, especially near the right atrium, where its thickness reaches 25 mm and there is a reaction of the adjacent parts of the right lung. Osteo-destructive changes are not detected (pic.1).

Conclusions. CT scan is a sign of acute gangrenous mediastinitis with a primary process in the submandibular region. Thus we observed the pathway of the spread of the purulent inflammatory process from teeth of the lower jaw to the mediastinum cavity as a consequence of infraction of asepsis (ules therefore a patient M. who had been operated twice and had clinical death was discharged from the department of the hospital with positive dynamics).

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