Secondary purulent mediastinitis clinical presentation: features & treatment

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Abstract. The article describes the features of the clinical presentation of acute purulent secondary mediastinitis in 8 patients undergoing inpatient treatment in maxillofacial surgery of the Osh Interregional Joint Clinical Hospital. An autopsy of the purulent-necrotic focus by external access and drainage of the wound was performed in 5 patients with anterior mediastinitis. The operation was performed according to our modified technique of opening the oral cavity floor and neck. Tonsillogenic phlegmons lead to posterior mediastinitis, surgical intervention is performed by the method of active drainage of the posterior mediastinum with hermetic closure of the neck wound using the Kanshin method. This method of surgical intervention was performed in 3 patients. Timely diagnosis and adequate modified drainage of acute purulent mediastinitis gave a positive result in the recovery of patients. All patients with anterior and posterior mediastinitis were discharged home in satisfactory condition.

1 Introduction

The leading place among secondary purulent mediastinitis is currently occupied by mediastinitis of odontogenic and tonsillogenic origin [1, 2]. The cause of secondary odontogenic purulent mediastinitis is the inflammatory processes of periodontitis, complicated by periostitis, osteomyelitis of the lower jaw, development of phlegmon of the chin, pterygomaxillary region, phlegmon of the oral cavity floor, fascial spaces of the neck with subsequent spread in the mediastinum. If 20-30 years ago odontogenic infection was complicated by purulent mediastinitis in 0.16% of cases, now the frequency of spread reaches 0,89-1,73% [3, 4].

In patients with angina, paratonsillitis, in case of infection spreading to the parapharyngeal space, conditions are created for its unhindered spread through the periesophageal tissue of the neck to the posterior mediastinum. The incidence of tonsillogenic purulent mediastinitis also increased from 0.4-0.8 to 1.5-2%. Non-clostridial anaerobic bacteria play a leading role in the development of odontogenic and tonsillogenic mediastinitis [5, 6].

The etiopathogenetic factor of secondary mediastinitis is acute odontogenic infections, due to the spread of purulent infection along the course of the neurovascular bundles of the neck, as well as along the pretracheal and periesophageal fiber into the posterior

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mediastinum. The main cause is the phlegmons of the pericellular space and the oral cavity floor of the maxillofacial region and neck. The threat of the spread of the inflammatory process in the mediastinum is especially great with the putrefactive-necrotic phlegmon [7].

The aim of the study was to improve the drainage of purulent-inflammatory processes of the oral cavity floor and neck, as well as mediastinitis.

2 Materials Methods of Research

From 2021 to 2023, 8 people with mediastinitis were observed and treated in the Maxillofacial Surgery Dept., the Osh Interregional United Clinical Hospital. Among the patients, 5 (62.5%) people were male and 3 (37.5%) were female. In the age aspect, the patients were distributed as follows: there were 3 (37.5%) patients aged 20 to 40 years, 4 (50.0%) from 41 to 60 years and -1 (12.5%) people over 60 years old. All patients, both rural and urban residents, were hospitalized in the clinic after 72 hours, that is, 3 days after the onset of the disease. The causes for the development of secondary mediastinitis of odontogenic and tonsillogenic factors are presented in Table 1.

Table 1. Distribution of patients with secondary mediastinitis by causes.

No.	Causes	Absolute number	% ratio
1	Odontogenic phlegmons of oral cavity floor	5	62.5
2	Tonsillogenic phlegmons and abscesses	3	37.5
	Total	8	100

Thus, the main contingent of patients with mediastinitis of an odontogenic nature were 5 (62.5%) people, patients with mediastinitis of a tonsillogenic nature - 3 (37.5%) people.

All patients underwent an operation to open and drain the purulent-necrotic focus with external access according to our method of modified methods of opening the oral cavity floor and neck. [8]

The methods are carried out as follows: opening the phlegmon of the oral cavity floor and neck, including two parallel incisions, from the angle to the angle of the lower jaw and the supraclavicular region of the neck, drainage of the wound, characterized in that additionally an incision is made on the anterior surface of the cleido-mastoid muscle connecting the upper incision with the lower one, which gives free access to the paratracheal region from the oral cavity floor to the chest.

Operation progress: After intubation anesthesia and appropriate preparation of the surgical field, a U-shaped incision is made parallel to the anterior cleido-mastoid muscle on the right, to the jugular notch, then a horizontal incision on the left to the sternocleidomastoid muscle, with the connection of an early incision in the submandibular region on the right, the skin, subcutaneous fat, superficial fascia of the neck, platysma is dissected, the outer leaf of the neck's own fascia, the flap is sharply and bluntly peeled off and tilted to the side, after careful vascular hemostasis, the anterior surface of the neck and the paratracheal region opens, starting from the submandibular to the jugular notch, the inspection of the parapharyngeal space, prevertebral space, paratonsillar region on both sides is made, pus is evacuated. Next, the inspection of the upper part of the anterior and posterior mediastinum is performed in a blunt way, pus is evacuated, mediastinum, paratracheal and paravertebral spaces are washed with antiseptic solutions (hydrogen peroxide 3%, chlorhexidine 0.05 %, furacilin solution), drained with two drainage tubes with a diameter of at least 24 mm, the prevertebral area is also drained from both sides. An aseptic dressing with a hypertonic solution and Levomekol ointment is applied to the wound.

3. Study Results and their Discussion

Diagnosis and treatment of such patients present certain difficulties due to organizational factors in the treatment process, which may ultimately determine the outcome of treatment as a whole. The main ones are considered to be: the lack of proper alertness of dentists and maxillofacial surgeons in the treatment of purulent-inflammatory diseases of this localization, their insufficient familiarity with the symptoms and the main patterns of the course of this formidable complication. As a result, a late consultation with a thoracic surgeon, loss of time for surgical intervention, is one of the main conditions for successful treatment.

Suspicion of mediastinitis should appear at the doctor in cases when, despite sufficient autopsy of the phlegmon of the oral cavity floor, neck, good drainage of the focus, intensive therapy, the patient's condition deteriorates sharply.

The process most often begins for various reasons: with the development of phlegmon of oral cavity floor, submandibular region, chin areas or the parapharyngeal space, which were not promptly diagnosed and opened. Very quickly, in 1-3 days, pus from the maxillofacial region descends through the interfascial spaces of the neck into the mediastinum. At the same time, in most cases, a clinical picture characteristic of neck phlegmon develops: an increase in general body temperature, general malaise, tension, dermahemia, compaction and painful infiltration of tissues, especially pronounced along the course of the neurovascular bundle. Sometimes, in addition to an indistinct pronounced inflammatory infiltrate in the submandibular space, patients have soreness along the course of the sternocleidomastoid muscle, not pronounced swelling and hyperemia of tissues at the muscle level and in the infraclavicular fossa. X-ray examination reveals: an increase in the shadow of the mediastinum and the presence of gas behind the sternum, which indicates the onset of mediastinitis.

According to our observations, in odontogenic diseases, the spread of infection into the mediastinum occurred in two ways: the first way - from the posterior part of the parapharyngeal space along the neurovascular bundle of the neck; the second - with phlegmon of the oral cavity floor or the roots of the tongue, pus overcomes the natural barrier in the area of the hyoid bone, enters the tissue plane between the parietal and visceral lamina of the endocervical fascia neck and along the trachea, freely descends into the mediastinum. The spread of the inflammatory process downwards through several interfacial crevices leads to the development of total anterior putrefactive-necrotic mediastinitis.

A patient with odontogenic mediasthenitis was autopsied and drained according to our modified method of opening the oral cavity floor and neck with a "U" shaped incision of the oral cavity floor and the supraclavicular region.

Thus, cervical mediastinitis was performed in 5 patients, of which 2 patients underwent right thoracotomy. As mentioned above, all surgical interventions were performed within more than 72 hours from the onset of the disease. Complex treatment, antibacterial therapy, detoxification therapy, as well as active drainage of the mediastinum with rubber tubes and active washing of the purulent focus with antiseptic solutions, the outcome of treatment was satisfactory. After 12-13 days, purulent-necrotic foci were cleared, epithelialization and granulation of postoperative wounds began, secondary sutures of postoperative wounds were applied on the 18th-20th day. Thus, timely diagnosis of acute purulent mediastinitis and adequate modified drainage of mediastinitis gave good results. All patients with anterior mediastinitis were discharged home with recovery.

In tonsillogenic mediastinitis, the greatest changes were found on the part of the pharynx, its asymmetry due to the protrusion of the abscess area, phlegmons. Almost all 3 (37.5%) patients with mediastinitis of tonsillogenic genesis had a retraction of the jugular cavity at the time of inspiration (Ravich-Shcherbo's symptom). As a rule, tonsillogenic phlegmons

lead to posterior mediastinitis, surgical interventions by the method of active drainage of the posterior mediastinum with hermetic closure of the neck wound using the Kanshin method were performed in 3 patients.

Thus, odontogenic and tonsillogenic mediastinitis represent one of the most complex forms of mediastinitis in general. The causes of the development of mediastinitis are various factors: odontogenic phlegmons of the oral cavity floor, peritonsillar abscess, necrotizing tonsillitis, retropharyngeal abscess, epiglottic abscesses, neck phlegmon. And finally, maxillofacial and thoracic surgeons need to pay great attention to the above-mentioned purulent-inflammatory disease. Treatment of odontogenic purulent-inflammatory diseases is important for early correct diagnosis, adequate drainage of the purulent focus and continuity in the work of maxillofacial and thoracic surgeons.

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