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Phlegmon of the Floor of the Mouth. Clinical Features, Diagnostics, Differential Diagnostics, Surgical Approaches for Opening A Purulent Focus

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Abstract: Oral phlegmon is an acute, diffuse, purulent inflammation of the cellular spaces of the oral floor (sublingual, submental, submandibular), most often of odontogenic origin. It is a purulent necrosis of soft tissue that has no clear boundaries. Unlike an abscess, it tends to involve adjacent intercellular spaces. It can occur anywhere in the human body. However, the head and neck area is particularly dangerous due to the large number of blood vessels through which the infection can spread to the brain.

Phlegmon of the floor of the mouth, often termed Ludwig's angina, is a rapidly progressive and potentially life-threatening cellulitis involving the submandibular, sublingual, and submental fascial spaces. Early recognition, accurate diagnosis, and timely surgical and medical interventions are critical to prevent airway compromise and systemic complications. This review synthesizes current evidence from peer-reviewed literature regarding clinical presentation, diagnosis, differential diagnosis, and surgical approaches.

Causes of occurrence

In 99% of cases, this disease develops due to dental problems. Experience shows that it is always a consequence of untreated caries. However, purulent melting does not develop immediately. It must be preceded by other pathologies, such as pulpitis, periodontal inflammation, the development of a radicular cyst, or osteomyelitis. A microbial source is always a prerequisite for infection.

Suppurative inflammatory processes don't always lead to the spread of infection. The human immune system plays a crucial role. When it weakens, pathogenic microbes in the purulent lesion can lead to necrosis of nearby tissues. The head and neck region is rich in cellular spaces that smoothly merge with one another.

But there's another factor: an infected wound, which could be the result of trauma. The development of purulent processes is very rare in this case, but it can occur in people with weakened immunity. Therefore, every wound should be treated with antiseptics.

Clinical picture

Patients complain of pain when swallowing and speaking, and general malaise. Breathing is often difficult. Patients adopt a characteristic forced posture: sitting with their head tilted forward, their hands resting on the edge of a bed or chair, and their mouth half-open . Symptoms are pronounced: temperature rises to 40°C, white blood cell counts reach 12-15 x 10/L or more, and ESR rises sharply. A marked shift in biochemical and immunological parameters is observed, indicating a decrease in the body's nonspecific resistance to infection and severe metabolic disorders, particularly the development of metabolic and respiratory acidosis. The patient has a distressed appearance, with his mouth half-open and drooling. His speech is slurred, and a foul odor emanates from his mouth. There is diffuse swelling of the tissues of the submental and submandibular areas on both sides. The overlying skin is tense and hyperemic. Palpation is painful. The mucous membrane of the floor of the mouth is hyperemic. The tongue is raised by the edematous tissues of the floor of the mouth, coated with a gray coating, swollen, and shows teeth marks. Palpation of the mouth is painful.

Putrefactive necrotic phlegmons of the oral floor, caused by hemolytic streptococci, E. coli, and anaerobic microflora, are particularly severe. In the literature, these phlegmons are described as Ludwig's angina. They are characterized by severe intoxication, with systemic reactions prevailing over local manifestations of the infectious and inflammatory process.

Odontogenic phlegmon

The development of these types of diseases is always caused by a dental problem. Any pathology of the masticatory system can lead to this outcome.

Problems may arise at the following stages:

Before tooth eruption;

At the moment when he is already in the row;

After its removal.

The most common cause of this disease is untreated dental caries. The pathological process in hard tissues, having passed through certain stages of disease progression (pulpitis -> periodontitis), can lead to the development of a radicular cyst. When the immune system is weakened, it can become infected, and the contents enclosed within the capsule can then spill out.

Wisdom teeth can also cause problems, as they are the latest to emerge and may not have enough space in the row. Once they are at least halfway through their emergence, they become vulnerable to decay. Food begins to accumulate under the gingival hood, which sits above the cusps. Cariogenic microorganisms then attach to this substrate, fermenting the food debris into organic acids. This eventually leads to the formation of a cavity in the hard tissue. The anatomical structure of wisdom teeth makes them very difficult to treat, and if saving them is not practical, it is best to remove them.

A very rare occurrence occurs when the disease develops after tooth extraction. The following factors may contribute to this:

Part of the organ was left in the socket;

Food getting into an unhealed socket;

Constant trauma to the socket with a blood clot, followed by infection.

If any remaining tooth element remains inside, it will in most cases lead to inflammation, as it will be perceived as a foreign body by the tooth's own tissues. Furthermore, the local immune system will be activated, actively producing lymphocytes. If pathogenic microflora is present, this phenomenon can spread to nearby tissues. Therefore, it is essential to remove everything remaining in the socket after tooth extraction.

Initially, the patient complains of swelling in the area of the extracted tooth and pain when opening the mouth. As the illness progresses, the facial puffiness increases. Then, with each passing day, the patient's general condition begins to deteriorate. The patient's temperature rises, and blood tests change, indicating an inflammatory process in the body.

Phlegmon of the floor of the mouth

Oral cellulitis is a diffuse, purulent inflammation of the subcutaneous tissue located between the muscles that make up the floor of the mouth. It can affect one or both sides of the mouth. This condition manifests itself in severe clinical symptoms.

The patient's facial appearance is distorted and asymmetrical due to edema. The adjacent submandibular and submental areas also exhibit inflammatory swelling. The skin over the purulent infiltrate is hyperemic and does not fold. Nearby lymph nodes are enlarged.

Patients complain of increased salivation and difficulty moving the tongue and jaw due to pain. The tongue, due to swelling, is too large to fit in the mouth and protrudes slightly. Teeth marks are visible on its surface. The patient appears thirsty.

The tongue and teeth are coated with plaque, as the patient's condition prevents proper oral hygiene. The composition of saliva also changes, becoming cloudy and viscous. Body temperature fluctuates between febrile and pyretic . Depressed or, conversely, agitated behavior is observed. The general condition of the body is characterized as severe.

The lower teeth, especially wisdom teeth, are the primary sources of microbial contamination. The upper teeth are not anatomically connected to the diaphragm area of the mouth, so they cannot cause this disease. Infection from the upper teeth will only spread to surrounding tissues.

Putrefactive necrotic phlegmon of the mouth, or Ludwig's angina

This pathology is similar in appearance to the previous condition, but its main difference is that there is no accumulation of pus in the presence of soft tissue necrosis. The symptoms of Ludwig's angina are very specific. This condition is extremely dangerous, as sepsis can develop if medical attention is not sought promptly. Fortunately, its incidence is very low.

A unique feature of Ludwig's angina is that the muscles are typically the primary site of injury. The surrounding tissue may be inflamed, but it's the muscles that bear the brunt of the pain. They become very dense and woody in consistency.

With this condition, patients complain of headaches and high fever. The fever may not reach high levels for the first two days. However, the patient's condition worsens with each passing day. The patient's face appears asymmetrical, and the chin and neck are swollen. Retracting the tongue is impossible due to the swelling. A foul odor and profuse gas formation from the source of infection are noted.

Diagnosis of oral phlegmon

The pathology can be diagnosed through a physical examination and oral examination. The doctor collects complaints and detailed information about the previous illness. The source of the infection is visually identified. If the purulent process is located in the superficial layers, diagnosis is usually straightforward. However, if the pus is localized in deeper areas, additional clinical and laboratory tests will be necessary. A microbiological culture will also be performed to determine the microbial flora. This is necessary to prescribe appropriate antibacterial medications.

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