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Acute lymphadenitis and affected spaces: A systematic review

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Abstract

Lymphadenopathy or adenopathy is disease of the lymph nodes, in which they are abnormal in size, number, or consistency. Lymphadenopathy of an inflammatory type (the most common type) is lymphadenitis, producing swollen or enlarged lymph nodes. In this review are described some datas about the most commonly affected lymph nodes, maxillofacial spaces, different types lymphadenitis. Clinical symptoms and treatment methods are described. The basic information sources are up to date articles. The author's results are retrospectively analysed.

Keywords: acute lymphadenitis, serous, suppurative, treatment

1. Introduction

Lymphadenopathy or adenopathy is disease of the lymph nodes, in which they are abnormal in size, number, or consistency. Lymphadenopathy of an inflammatory type (the most common type) is lymphadenitis, producing swollen or enlarged lymph nodes. In clinical practice, the distinction between lymphadenopathy and lymphadenitis is rarely made and the words are usually treated as synonymous. Inflammation of the lymphatic vessels is known as lymphangitis. Infectious lymphadenitides affecting lymph nodes in the neck are often called scrofula ^[1].

The major lymph nodes of the head and neck area should be palpated with the patient in an upright position (Fig 1). Findings which should be noted in the patient record include enlarged palpable nodes, fixed nodes, tender nodes and whether the palpable nodes are single or present in groups. Single or multiple non-tender, and fixed nodes are very suspicious for malignancy. Groups of tender nodes usually occur in conjunction with some type of acute infection. Occasionally nodes will remain enlarged and palpable after an infection. This is a relatively common occurrence especially within the submandibular group of lymph nodes. When examined, these nodes should be small (less than 1 cm), non-tender and mobile ^[2].



Fig 1: Palpate the submandibular lymph nodes using a cupped hand as shown. Source: Burkhart NW, De Long L ^[2].

According to Ugrinov R. ^[3] odontogenic lymphadenitis are the most common types in maxillofacial area in adolescents follow up tonsillogenic, dermatogenic, stomatogenic, otogenic. The non-odontogenic lymphadenitis of the maxillo-facial area occurred most frequently in the children as a result of viral infection: Infectious mononucleosis, HIV-infection, etc.

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The lymph nodes are part of the reticuloendothelial system and responsible for the biological filtration according their histology, anatomy and biology. The lymph nodes can affect all biological products (microorganisms and their toxins, death cells, pigments and another antigens through phagocytosis of macrophages and microphages. The lymph nodes are component of the immune system were unable to neutralize microorganisms. From filters converted into the reservoirs for microorganisms. Development of lymphadenitis form depends on their virulence.

According to Sarachev E. [4] odontogenic etiologic factors for lymphadenitis are: acute and exacerbate periodontitis; delayed tooth eruption (DTE) of primary and permanent teeth; exacerbated cyst and tumours in the jaw bone; localized and diffuse osteomyelitis of the jaws; exacerbated impacted and partially impacted teeth; ulcerative gingivostomatitis, abscesses and phlegmon of the maxillofacial region.

According to Atanasov D. [5] lymph inflammation is divided into two main types: acute and chronic. Depending on the composition of exudate, acute inflammation is divided into the following types: serous and purulent.

Acute serous lymphadenitis - in this form there is an inflammation of the lymph nodes, but no pus. Acute serous lymphadenitis is initial stage of development of the the inflammatory process in lymph nodes. Start with discomfort, stretching of the tissues, dull pain, difficulty swallowing and head movements. The lymph nodes are tenderness, enlarged, mobile with tight-elastic consistency, round and oval shape. An asymmetrical face usually looks and skin over swelling is without changes. The general condition is not affected and less affected, but in many cases can observe high temperature (38°C). By effective treatment of basic disease caused lymphadenitis, inflammation process of lymph nodes undergo a back development: lymph nodes decrease in size, become soft, reduce pain. 2-week later achieve normal shape and size and by physical exam are not palpable. Acute serous lymphadenitis treatment includes treatment of basic disease caused inflammation process of lymph nodes.

Scobie WG. [6] described 964 cases of acute suppurative adenitis in children treated surgically during the period 1960 to 1968. Seventy per cent had received an antibiotic prior to admission, penicillin being the commonest. All were treated by incision and drainage under general anaesthesia. *Staphylococcus pyogenes* was grown from 67 per cent of the abscesses. Resistance of this organism to penicillin rose progressively over the period of review. In the last 20 years, the *staphylococcus* has replaced the *streptococcus* as the most common infecting organism in suppurative adenitis. The study reveled that these patients present late for medical treatment and come to surgery in spite of antibiotic treatment.

The major complaints of acute serous odontogenic lymphadenitis are: appearance movable, painful "ball" during the palpation in the certain area. The child would note that it was tooth ache before of the lymph node enlargement. Clinical course: General condition without significant changes: minimal rising of the body temperature, insignificant intoxication. During examination: spherical lump which is painful during palpation. Mobility of the lump could be limited and it would be the sign of spreading of the process to the surrounding tissues. The skin above the lymph node is without changes. There is no enlargement of the lymph node from the other site. During oral cavity examination the causative tooth with positive percussion can be revealed. In most cases the diagnosis of periapical inflammation is easily determined [7].

Acute suppurative lymphadenitis are caused by high-virulence

infection. Acute suppurative lymphadenitis can be primary or appears after acute serous lymphadenitis. The development of suppurative lymphadenitis characterized by pulsating pain. The lymph nodes decrease mobility, surrounding tissues infiltrate, there is also periadenitis, fixed to adjacent nodes, suppurate and forms a lymph node packages. Subsequently with development of disease, softening appears and fluctuation. Symptoms may include warmth or redness of the skin over the superficial lymph nodes. The patient's body temperature rises and his appetite is lost. The nodes may dissolve with the formation of a fistula or adenophlegmon. The adenophlegmon appears after capsular rupture of lymph node and puss collection spreads rapidly to the adjacent tissues. The process of pus breakdown of the lymph node can develop fast for several days or slowly after basic disease treatment. Acute suppurative lymphadenitis treatment includes incision and drainage [5].

The submandibular nodes are found grouped around the submandibular gland near the angle of the mandible. The easiest way to locate the gland and the nodes is to place a finger on the inferior border of the mandible near the angle. The areas that drain into these nodes are all of the maxillary teeth and the maxillary sinus, with the exception of the maxillary third molars; the mandibular canines and all mandibular posterior teeth, with the possibility that the mandibular third molars may not drain here; the floor of the mouth and most of the tongue; the cheek area; the hard palate; and the anterior nasal cavity. Any infections in these areas tend to cause enlargement and tenderness of the submandibular nodes. This condition is referred to as lymphadenopathy [8].

The lymphatics of the head and neck can allow the spread of infection from the teeth and associated oral tissues. This occurs because the pathogens can travel in the lymph through the lymphatics that connect the series of nodes from the oral cavity to other tissues or organs. Thus these pathogens can move from a primary node near the infected site to a secondary node at a distant site. The route of dental infection traveling through the nodes varies according to the teeth involved. The submandibular are the primary nodes for all the teeth and associated tissues, except the mandibular incisors and maxillary third molars [9].

According to Mathew GC, Ranganathan LK, Gandhi S, Jacob ME, Singh I, Solanki M *et al.* [10] maxillofacial space infections can cause several life-threatening complications despite skillful management. Out of 137 patients identified, 66.4% were men. Mean patient age was 40 years, and 24.1% of the patients were diabetic. The most common origin was pulpal (70.8%), the most common space involved was the submandibular space, and the most common teeth responsible were the lower third molars. Twenty patients (14.6%) developed complications. Diabetes, multiple space involvement, and a total leukocyte count of $\geq 15 \times 10^9/l$ were associated with complications.

Periapical infection from a mandibular second molar may spread by direct extension to the submandibular space.

According to Ghom AG, Ghom SA. [11] Due to the position of second molar in the alveolar process, there are 50% chances of perforation of the infection either buccally and lingually. There are equal chances of the root apices to be either above or below the attachments of the mylohyoid or buccinator. Hence there are 4 possible sites for localization of infection arising from these teeth:

1. On the buccal aspect, abscess may, form in the buccal vestibule
2. It may appear in the buccal space

3. On the lingual surface, exit of infection above mylohyoid will result in sublingual abscess
4. Perforation below the mylohyoid muscle results in submandibular space involvement

According to Baghery SC. ^[12] surgical establishment of drainage, along with removal of the source of infection, is the most important treatment for vestibular and buccal space infections. Antibiotic therapy is considered beneficial and should be initiated to aid resolution of the infection.

2. Conclusion

In dentistry, early detection and accurate diagnosis of the lymphadenitis is of paramount importance for successful treatment. Therefore, the dentist must have knowledge of the histology, anatomy and biology of lymphadenitis and their clinical features to ensure accurate diagnosis and proper treatment.

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