Ludwig's Angina

Angine de Ludwig

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Abstract

Ludwig's angina is a severe diffuse cellulitis that presents an acute onset and spreads rapidly and bilaterally. It can affect the submandibular, sublingual or submental spaces resulting in a state of emergency. Early diagnosis and urgent management could be a life-saving procedure. We report a case of wide spread sialadenitis infection extending to the neck with trismus and elevation of the floor of the mouth that caused an obstruction of the airway and resulted in an inspiratory dyspnea and a stridor. The patient was directed to maintain the airway by elective tracheostomy. An appropriate use of parenteral antibiotics, airway protection techniques, and potential surgical drainage of the infection remain the standard protocol of treatment in advanced cases of Ludwig's angina. The aim of this case report is to emphasize on the importance of early diagnosis and appropriate management of Ludwig's angina.

Key words: Ludwig's angina, antibiotics, anaerobic bacteria, surgical decompression; tracheostomy

Résumé

L'angine de Ludwig est une cellulite diffuse sévère. Elle s'étend rapidement et de façon bilatérale dans les espaces sous-mandibulaires, sublinguaux ou sous-mentaux. Elle nécessite une approche multidisciplinaire urgente pour un diagnostic précoce et une prise en charge adéquate. Nous rapportons un cas d'infection sialadénite étendue au cou avec trismus et élévation du plancher buccal qui a provoqué une obstruction des voies respiratoires et entraîné une dyspnée inspiratoire et un stridor. Une trachéotomie a été réalisée pour libérer les voies respiratoires. L'utilisation appropriée d'antibiotiques par voie parentérale, les techniques de protection des voies respiratoires et le drainage chirurgical éventuel de l'infection restent le protocole de traitement standard dans les cas avancés d'angine de Ludwig.

Mots clés: Angine de Ludwig, antibiotiques, bactéries anaérobies, décompression chirurgicale ; trachéotomie

INTRODUCTION

Ludwig's angina is a life-threatening diffuse cellulitis of the submandibular, sublingual, and submental space, characterized by its propensity to spread rapidly to the surrounding tissues (1). The most life-threatening complication of Ludwig's angina is airway obstruction, with progressive swelling of the soft tissues causing elevation and posterior displacement of the tongue (1). Prior to the development of antibiotics, mortality was over 50% (2). With prompt airway management and antibiotic therapy, as well as advanced imaging and surgical procedures, mortality has decreased to about 8% (3). Therefore, early recognition and treatment for Ludwig's angina are crucial.

Aim

Herein, we report a case of a middle-aged woman with Ludwig's angina complicated with acute airway obstruction in order to highlight the crucial importance of its early diagnosis and appropriate management.

CASE REPORT

A 50-years-old woman presented to the emergency department with a left submandibular swelling that has been present for two days and was progressively spreading to the left parotid region and to the contralateral side. (Figure 1).

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Figure 1. Bilateral parotid and submandibular swelling

The patient had no other known comorbidities. At first, the main symptom was an odynophagia without dysphagia, nor dyspnea nor trismus. Afterwards, she suddenly developed an acute atraumatic pain in the left submandibular region. She did not report any fever or deterioration in her general condition.

An indurated swelling of the submandibular, submental and parotid regions, extending to the cervical region up to the sternal fork, was noted on physical examination. The swelling was non-fluctuant and sensitive to palpation. Examination of the oral cavity showed purulent serosal emission from the left Stenon orifice, swelling of the flour of the mouth and elevation of the tongue with no dental infection but poor dental condition.

She had CRP of 135 mg/L and leukocytosis of 13,450/uL. A cervicothoracic computerized tomography (CT) showed hypertrophic parotid, submandibular and sublingual glands, with a striated appearance and heterogeneous enhancement. An infiltration of the deep spaces of the face and the anterior cervical space to the mediastinum was visualized, in addition to a diffuse edematous laryngeal infiltration with reduction of the respiratory and digestive tract. (Figure 2). The CT scan did not show any evidence of abscess or bone erosion.

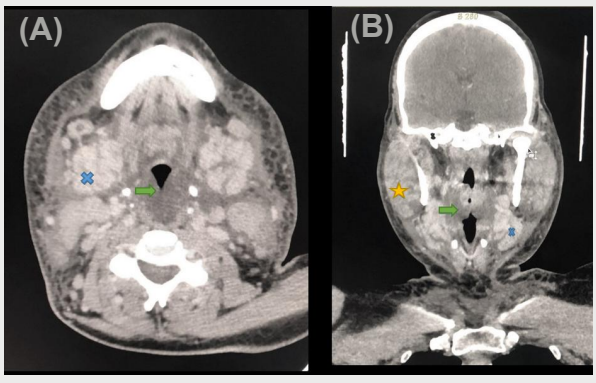

Figure 2. Injected CT scan in axial (A) and coronal (B) section showing hypertrophic parotid (yellow star), submandibular (blue cross) and sublingual glands. An infiltration of the deep spaces of the face and a diffuse edematous laryngeal infiltration with reduction of the respiratory and digestive tract (green arrow).

Within a few hours, the patient experienced a rapid increase in cervical edema, with the onset of acute inspiratory dyspnea and stridor, requiring emergency tracheostomy.

The patient was started on intravenous antibiotics combining tazocillin with gentamicin, and intravenous corticosteroid therapy.

On the third day of her hospitalization, she reported improvement of the pain and regression of the swelling. (Figure 3). Biological inflammatory syndrome persisted for four days. The patient was decannulated after five days of antibiotics. She was eventually discharged at day ten, on amoxicillin-calvulanate for seven days.

Figure 3. Regression of swelling

DISCUSSION

Ludwig's angina is a fatal progressive diffuse cellulitis affecting the soft tissue of the floor of the mouth and neck. It involves the sublingual, submental, and submandibular spaces bilaterally and can spread rapidly to the adjacent tissues, leading to various life-threatening complications (4).

The majority of Ludwig's angina cases are originated from dental infection, especially the second or third mandibular molar (5). Patients commonly report a history of recent dental extraction or dental pain (4). Other causes include oral cavity, pharyngeal or salivary primary involvements as the starting point of Ludwig's angina such as infections, lacerations, piercings and mandibular fracture (6). As represented in this case, the patient first described a submandibular sialadenitis rapidly extended to surrounded tissues.

Predisposing factors have been suggested in one third of cases, including diabetes mellitus, oral malignancy, alcoholism and immunodeficiency (7). Poor dental conditions and dental treatment are independent risk factors (4).

Ludwig's angina is generally polymicrobial, intrvolving oral flora: aerobes and anaerobes. The most frequently identified micro-organisms are Bacteroides sp, fusibacterium sp, peptostreptococcus , ß-hemolytic streptococcus group A and staphylococcus aureus (8).

The most frequent symptoms of Ludwig's angina are facial and neck swelling, elevation of the base of the tongue, malaise, fever, swallowing and speaking difficulty (4). Trismus caused by irritation of mastication muscles is another typical complaint (4). Physical examination reveals submental and submandibular swelling and tenderness. Swelling of the flour of the mouth and elevation of the tongue indicate the sublingual space involvement. Induration of the submandibular area with sometimes, palpable crepitus and edema of the neck are common findings. The presence of lymphadenopathy is rare (2).

Inability to swallow saliva and a stridor are the first signs of an imminent airway compromise (9).

The most common cause of death is asphyxiation due to airway obstruction. Therefore, when Ludwig's angina is diagnosed, the first step is to evaluate and secure the airway, with either fiberoptic intubation or emergent awake tracheostomy (4). Traditional intubation with a direct laryngoscopy can be difficult because of trismus and tongue elevation. It's prohibited by some authors given the fact of a potential bleeding or abscess rupture (1).

CT (Computed tomography) scan of neck with intravenous

contrast is used to evaluate the severity of the infection and assess for any abscess (6).

The treatment of Ludwig's angina is based on antibiotic therapy, associated in some cases with surgical draining.

Early broad-spectrum intravenous antibiotics is crucial for successful treatment. B-lactams, more likely penicillin +/- penicillinase inhibitors, associated with clindamycin or metronidazole are the most commonly prescribed antibiotics. Some authors also recommend the association of gentamycin (6) (9). Moreover, the prescription of intravenous steroids and nebulized adrenaline allow a decrease in the need for airway management and an increased penetration of antibiotics into the fascial spaces (10). The duration of the antibiotics is at least two weeks while monitoring closely white blood cell count and fever (4).

Surgery is reserved for patients who develop abscesses and are unresponsive to a medical management, since early surgical decompression has not been shown to improve outcomes (2). The surgical drainage is aimed at decompressing the submental, submandibular, and sublingual spaces by external incision (4) (9).

CONCLUSION

Ludwig's angina is a severe rapidly progressive cellulitis involving the visceral areas of the neck that can quickly cause airway obstruction. It requires an urgent multidisciplinary approach. To ensure antibiotic efficacy, a broad spectrum including Gram-positive, Gram-negative bacteria and anaerobes must be considered. Surgical excision and debridement is indicated for patients who fail medical therapy and developp suppurative infection.

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