Serious Staphylococcus Aureus Infection in a Patient with Diabetes Mellitus

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ABSTRACT

The immune system and metabolism are closely related and it is recognized that diabetes mellitus (DM) and its complications have a compromising impact on the degree of immunosuppression.

The authors present the case of a 65-year-old man with a history of type 2 DM and ulcers of the lower limbs who went to the emergency department with odynophagia, dysphagia, fever and cervicalgia. He had a painful cervical and supraclavicular region and highly infectious parameters in blood samples. The cervical radiography suggested vertebral fusion and cervical computed tomography with soft tissue thickening, hypopharyngeal deviation and gaseous foci suggestive of abscess.

He started empiric antibiotic therapy and was performed an abscess drainage where Staphylococcus aureus oxacillin susceptible was isolated.

S. aureus bacteremias have a higher prevalence in diabetics, being essential the rapid orientation in situations of bacteremia to clarify the infectious focus and immediate onset of antibiotic therapy which decreases mortality.

Keywords: Type 2 Diabetes Mellitus, Imunosupression, Staphylococcus aureus

Abbreviations: DM - diabetes mellitus
Introduction:
Diabetes affects the immune system and is an example of interaction between the immune system and metabolism. The presence of complications of diabetes have a compromising impact on immunosuppression. Several mechanisms of innate and acquired immune dysfunction present in this pathology have been described over the past few years. Studies have shown a decrease in humoral immunity due to immunoglobulin alterations which may exacerbate Staphylococcus aureus (S. aureus) infections. On the other hand, the reduction of phagocytosis and chemotaxis of neutrophils in diabetics is recognized. Retropharyngeal abscesses are common and usually spontaneous in diabetics. They may be the source of serious systemic infections, and it is recognized by the scientific community that Staphylococcus aureus (S. aureus) bacteremia occurs more frequently in diabetics (3 times more) compared to the general population. This risk proved to be higher for higher values of glycated hemoglobin and in the presence of macro and microvascular complications.

The diabetic population presents an increased risk of invasive S. aureus infection, which is the predominant microorganism in retropharyngeal abscesses and diabetic foot infections.

Case Report: A 65-year-old man who went to the emergency department for odynophagia, dysphagia and cervicalgia with several days of evolution. Dysphagia was initially for solids and later for liquids, culminating in inability to eat food in the 4 days prior to coming to the emergency room.

He reported posterior cervicalgia irradiated to the left arm with weeks of evolution without relief factors, but with aggravation to the mobilization of the head.

Previously he had been evaluated by Otorhinolaryngology colleagues who reported inflammation of the mucosa of the pharynx. He had a fever in the last days (maximum 38.5°C), which gave way to taking antipyretics and nausea.

He had a personal history of type 2 DM with microvascular complications (diabetic neuropathy) and ulcers in both lower limbs, usually medicated with gliclazide and rosiglitazone.

The objective exam showed arterial pressure of 168/76 mmHg, heart rate of 87 bpm, oxygen saturation of 97%, tympanic temperature of 37.9°C and capillary glycemia of 412mg / dL. He was conscious, cooperative, but agitated and confused, eupneic in ambient air. Oropharynx was not flushed, with uvula in the midline and tonsils without exudates or plaques.

He had diffusely painful cervical region and painful supraclavicular region of hard consistency. The cardiac, pulmonary and abdominal auscultation were without changes. The lower limbs were with clean, dry patches in the ulcer area.

From the complementary study, analytically leukocytosis was 14.2x10^9 / L, neutrophilia 12.5x10^9 / L and platelets 297x10^9 / L. Reference values between parentheses (Leukocytes 4.0-10.0x10^9 / L, neutrophils 2.0-7.0x10^9 / L and platelets 150-400x10^9 / L). Coagulation times, renal, hepatic function and ionogram had no changes. C-reactive protein 38.10 mg / dL (<0.50 mg / dL). Blood cultures were collected.

Soft tissue ultrasound was performed on the cervical region, which revealed no expansive processes or enlarged lymph nodes with adenopathy dimensions.

His cervical radiograph (Fig. 1) had an apparent vertebral fusion / lesion with mass effect in the hypopharynx region. We discussed the case with colleagues in Orthopedics and asked for cervical computed tomography (CT) that revealed degenerative changes in the cervical segment including osteophyte reaction, intercorporeal space narrowing, signs of uncarthrosis and interaphysiary arthrosis. In the obtained plans, thickening of the pre-vertebral soft tissues was also observed, conditioning...
anterior deviation of the hypopharynx, identifying small gaseous foci compatible with abscess. (Fig. 2-3).

He was empirically medicated with vancomycin and piperacillin-tazobactam and sent for evaluation by otorhinolaryngology, who altered his antibiotic therapy for ceftriaxone and metronidazole, which he fulfilled 14 days.

Figure 1. Cervical radiograph with apparent vertebral fusion

Figure 2. Cervical CT cut showing small gaseous foci in the pre-vertebral soft tissue.
Supplementary study with cervical CT of soft tissues where it was observed in the infrahyoid region, occupying the left retropharyngeal space and extending inferiorly to the visceral space of the neck, heterogeneous collection, with central gaseous foci and poorly defined limits, admitting of 15x40x74 (APxTxL), in probable relation with abscess. The collection conditioned anterior displacement of the pharynx and larynx and external deviation of the carotid space.

He was admitted to the Otorhinolaryngology department for antibiotic compliance and was submitted to a surgical cervicotomy with retropharyngeal abscess drainage after 48 hours of hospitalization. A penicillin G-resistant and gentamicin sensitive, trimetopim / sulfamethoxazole-resistant S. aureus was isolated in microbiological culture, the same microorganism who had been isolated in the two blood cultures collected, in an emergency context. A nasogastric tube was placed and an infra-hermetic tracheotomy was performed.

He had clinical and analytical improvement, having been discharged with antibiotic therapy of amoxicillin-clavulanic with indication to fulfill another 8 days and to maintain care of tracheotomy dressings.

**Discussion:**

This case reports a serious infection whose degree of suspicion of the clinician is fundamental in the search for the infectious focus. Controlling this is mandatory to improve the prognosis because the morbidity of patients with retropharyngeal abscesses is high. 9-11,12

Retropharyngeal abscesses are more frequent in children and rare in adults, except for diabetic adults, in whom deep cervical abscesses have a prevalence of 12.8%. 7

Usually the etiology of the abscess is related to foreign bodies or local trauma but in our patient it has been concluded that it was a spontaneous abscess.

Signs and symptoms include difficulty in swallowing, dysphagia, odynophagia, fever, neck pain and stridor, but these may be atypical in diabetics or be absent by immunosuppression of diabetes. 9-11,12

Retropharyngeal abscesses may be life-threatening and emergent situations. The doctor should have a high degree of suspicion
with CT being the essential diagnostic tool. Radiography may alert us to the enlargement of retropharyngeal space and loss of lordosis.\textsuperscript{12} Keeping the patent airway should be the main objective.\textsuperscript{8,11} 

The combination of medical and surgical treatment is essential, since isolated medical treatment is usually insufficient.\textsuperscript{10,11} Poor glycemic control increases the risk of Staphylococcus aureus bacteremia. Klebsiella pneumoniae and polymicrobial infections are also common in diabetics.\textsuperscript{7-9} The presence of diabetes is a risk factor for meticillin-resistant S. aureus (MRSA).\textsuperscript{10} Treatment, when there is a risk of MRSA, should be performed with vancomycin or linezolid in combination with other therapeutic regimens according to the source of infection.

The control of comorbidities maintaining a glycemic balance is fundamental to obtain a favorable prognosis.\textsuperscript{8}

References:


