Acta Otorrinolaringol Esp. 2010;**61(1):**81-84

Acta Otorrinolaringológica Española

www.elsevier.es/otorrino

CASE STUDY

Sudden myositis of the posterior cervical muscular compartment. Case report

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Received January 14, 2009; accepted March 16, 2009
Available online July 24, 2009

KEYWORDS
Myositis;
Streptococcus pyogenes;
Toxic shock syndrome

Abstract
An atypical case of deep neck infection is presented with muscular involvement as the main feature. *Streptococcus pyogenes* was the causal agent and abrupt haemodynamic impairment and severe systemic failure characterised its clinical course, requiring emergency surgical examination and subsequent admission to the critical care unit. After the diagnosis of Streptococcal Myositis was obtained and the antibiotic treatment adjusted, the patient progressively improved to complete recovery

PALABRAS CLAVE
Miositis;
Streptococcus pyogenes;
Síndrome del shock tóxico

Miositis fulminante del compartimento muscular cervical posterior. A propósito de un caso

Resumen
Presentamos un caso de infección cervical profunda atípica con afectación principalmente muscular, cuyo agente causal fue *Streptococcus pyogenes*, y cuya clínica y evolución se caracterizaron por un brusco deterioro hemodinámico y fallo sistémico severo que hizo necesaria una exploración quirúrgica urgente y su posterior ingreso en la UCI. Tras el diagnóstico de miositis estreptocócica y el pertinente cambio de pauta antibiótica, el paciente presentó una mejoría progresiva hasta su restitución completa.

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0001-6519/$ - see front matter

Case study

An 80.year-old male patient who was admitted with fever in the previous 24 h associated to a non-fluctuating increased left posterior laterocervical volume, with skin erythema and oedema, slight crepitation and severe pain upon palpation, disproportionate with the rest of the findings. Due to a suspicion of deep cervical infection, intravenous antibiotic and anti-inflammatory therapy were initiated and a CT was requested, which showed intramuscular oedema and necrosis, perifascial fluid and surrounding cellulitis, affecting the left posterior cervical muscle compartment (Figure 1).

Over the first 12 hours of admission, rapidly progressive haemodynamic deterioration took place, so it was decided to perform urgent exploration and surgical debridement. The subcutaneous fat plane was accessed by a McFee-type incision, revealing severe cellulitis and oedema. The fascial planes of the cervical musculature were opened, with no purulent collections being found or anaerobic fetidness being perceived. A yellowish serous fluid was found "infiltrating" the muscle and fat tissues, of which specimens were collected for culture and histopathology. The intermuscular spaces were opened widely and tiled drainages were placed (Figure 2A).

Septic shock and acute respiratory distress syndrome persisted after surgery, so the patient was admitted into the ICU, where he received advanced life support through mechanical ventilation, vasoactive drugs (dopamine, epinephrine) and broad spectrum antibiotic therapy (meropenem, vancomycin). The culture was positive for *Streptococcus pyogenes*, and the histopathological study indicated acute inflammation and necrosis of muscle and fibroadipose tissue.

A diagnosis of streptococcal myositis and streptococcal toxic shock syndrome (STSS) was established and intravenous treatment with penicillin and clindamycin was initiated. The progressive deterioration of renal function determined the start of dialysis during the fifth postoperative day. The patient presented cutaneous oedema and erythema progressing towards the left upper limb and the left side of the thorax, making fresh incisions necessary as well as debridement up to the fascial plane in the affected areas (Figure 2B).

Following the establishment of the new antibiotic and haemodialysis regime, a progressive improvement was observed in general condition. Complete clinical restitution was achieved one month after the intervention.

Discussion

An increased incidence of invasive soft tissue infections caused by Group A Beta-Haemolytic *Streptococci* (GABHS) was described in the mid 80 s. Its severity and poor prognosis reached the media, who named it, in a somewhat sensationalist fashion, "flesh-eating bacteria."[1] The most common presentation of these infections (streptococcal necrotizing fasciitis [NF]) affects fascia and subcutaneous fat tissue; this must be differentiated from streptococcal necrotizing myositis (NM), which is associated to myonecrosis without abscesses and not affecting fascias, described as a separate entity by Adams in 1985.[2] The potential lethality that accompanies these infectious cases is due to the frequent association of an abrupt haemodynamic deterioration denominated STSS.[3]

The myositis caused by this organism is extremely rare. Despite the rarity of cases described in the medical

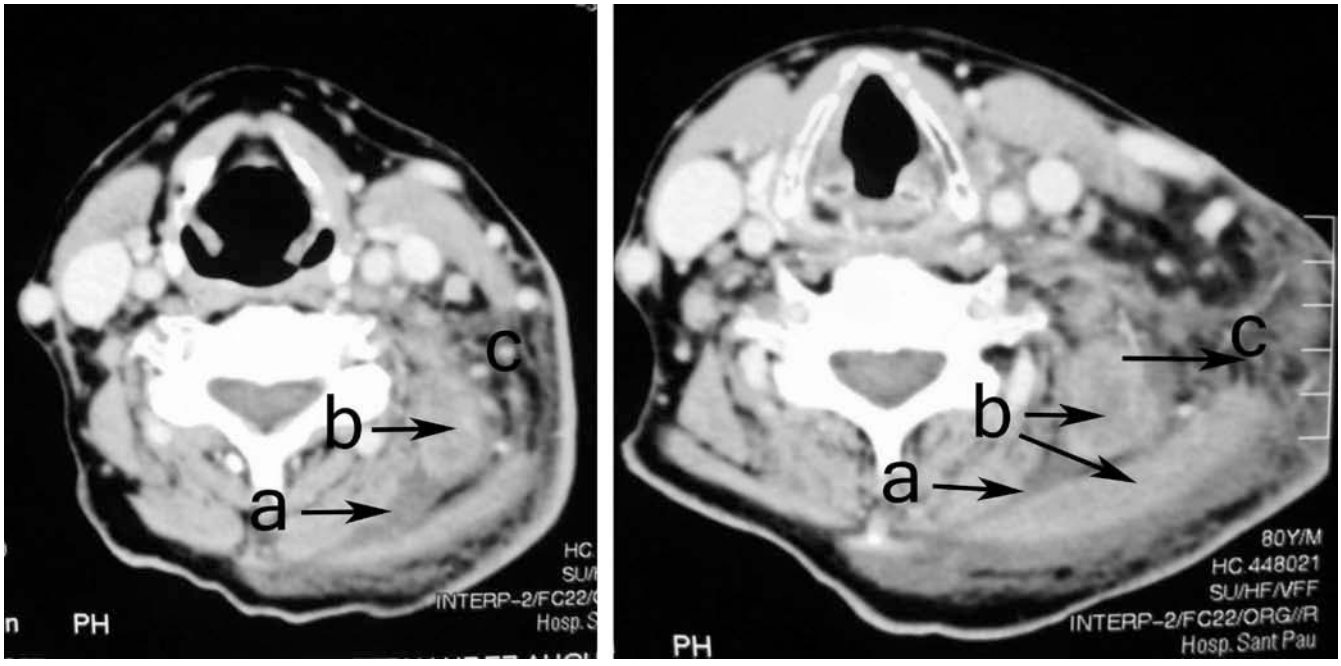

Figure 1 Preoperative CT images. Important asymmetry at the expense of the left posterior musculature where a collection of perifascial fluid can be observed (a), muscular oedema, intramuscular necrosis (b) and adjacent cellulitis (c).

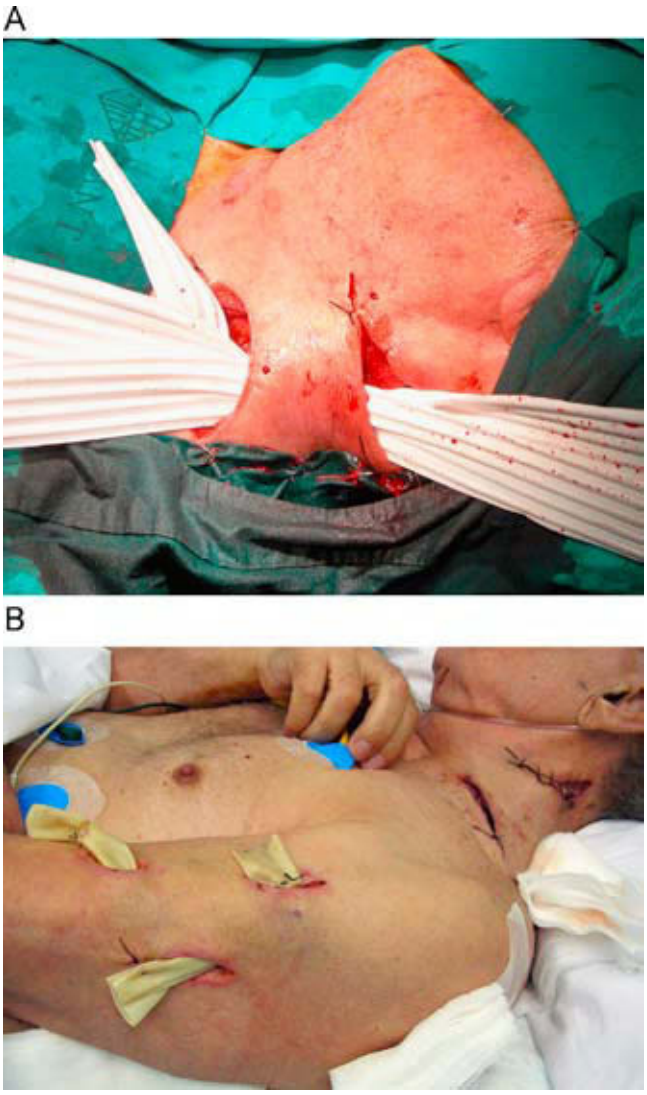

Figure 2 A) McFee incision for debridement and sampling, with tiled drainage for subsequent washing of the wound. B) Incisions and drainages in areas of extension by contiguity.

literature, 25 cases through 1985,[3] various authors place the mortality of NM at between 80% and 100% This forces an early suspicion, cause and start of an aggressive medical-surgical approach in order to optimise the chances of survival.

There is no agreement about the existence of predisposing factors, although most cases occur in patients of all ages who were previously healthy, immunologically competent and asymptomatic. There is a slight predominance of the male gender and affectation of muscle groups proximal to lower or upper extremities.[4] No cases of myositis which originated in the cervical musculature were found in the medical literature reviewed.

An onset with non-specific symptoms and its similarity to other musculoskeletal processes cause a delay in diagnosis that worsens its already poor prognosis. Three stages have been described in the evolution of NM:

1. *Initial prodromal stage:* lasting 3 to 7 days, similar to influenza with arthralgia, nausea, vomiting and diarrhoea. There is associated pain in the affected muscle, of increasing intensity and characteristically disproportionate with the associated findings.
2. *Intermediate fast stage:* lasting several hours and with rapid increase of the pain, which restricts manipulation and mobilisation, and associating the first signs of systemic toxicity. Unlike cases of NF, the affected area does not usually present skin necrosis or blistering lesions. The indemnity of the fascia together with intramuscular oedema cause a rise in intramuscular pressure, generating compartmental syndrome.[5]
3. *Late stage:* of variable duration, with a fatal outcome or progressive improvement, leaving variable sequelae and morbidity. In most cases, it is associated with STSS, resulting in haemodynamic shock, multi-organ failure and coagulopathy.

The CT shows an increase in muscle volumes, the presence of perifascial fluid, adjacent cellulitis and muscular hypodensity that correspond to myonecrosis.

Rapid systemic deterioration, despite the initial antibiotic treatment, requires an aggressive attitude, ranging from surgical exploration of the injuries to subsequent admission in an intensive care unit where the patient is stabilised through ventilation, vasoactive drugs and haemodialysis, depending on the development of STSS.[6] An early surgical approach is associated with lower mortality, presenting both a diagnostic aspect (visualisation of tissues and sampling) and therapeutic aspect (fasciotomy to release the intramuscular pressure secondary to myonecrosis).[7]

The confirmation of a GABHS requires the association of intravenous clindamycin and penicillin at high doses[8] because, despite its theoretical universal sensitivity to the b-lactam antibiotics, a significant decrease of their effectiveness has been shown in aggressive tissue infections ("inoculum effect" or *eagle effect*).[3] Clindamycin is not affected by the size of the inoculum or the stage of bacterial growth, in addition to inhibiting the synthesis of exotoxin and proteomes.

Despite its low incidence and the rare involvement of the cervical musculature, the present case highlights the importance of taking atypical infections such as NM into account. This thus facilitates its early suspicion and the application of appropriate diagnostic and therapeutic manoeuvres, based on surgical debridement, a specific antibiotic therapy and intensive care.

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