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Diagnosis at first sight

Necrotizing fasciitis from a spider bite?

¿Fascitis necrosante por una picadura de araña?

Ander Uribarri García*, Aitziber Aguinaga Pérez, Miguel Fernández Huerta, Carmen Ezpeleta Baquedano

Servicio de Microbiología, Hospital Universitario de Navarra, Navarra, Spain

Case report

We present the case of a 58-year-old man with a relevant history of obesity, stage IV epidermoid adenocarcinoma of the oesophagus (undergoing chemotherapy, CAPOX [capecitabine and oxaliplatin]-nivolumab regimen), chronic alcoholic liver disease in the phase of decompensated liver cirrhosis, portal hypertension with oesophageal varices, ascites and previous episodes of hepatic encephalopathy. Two weeks before admission to our centre, he had been referred to another hospital for left malar cellulitis with extension to the eyelids following a spider bite. He was discharged after five days on oral amoxicillin-clavulanic acid (875 mg/125 mg every 12 h for five days).

Three days after finishing the antibiotic therapy, he came to the Accident and Emergency department of our hospital due to facial oedema, suppuration and clinical worsening. Examination revealed left hemifacial paresis with deviation of the labial commissure and a 4 × 3-cm necrotic plaque in the malar region (Fig. 1A). A facial computerised tomography (CT) scan showed findings consistent with extensive cellulitis in the left facial-malar region, superficial air bubbles, fasciitis and inflammatory changes in the fatty tissue deep to the fascia and in the masseter muscle. The patient was admitted, a syringe sample of the abscess was taken and empirical intravenous antibiotic therapy with ceftriaxone 2 g/24 h and cloxacillin 2 g/4 h was started. After 24 h, the patient's condition deteriorated, presenting with bilateral eyelid inflammation that prevented the eyes and lips from opening. Antibiotic therapy was switched to ceftaroline 600 mg/8 h and ertapenem 1 g/24 h. However, the lesion continued to progress and seven days after admission, surgical debridement was required (Fig. 1B).

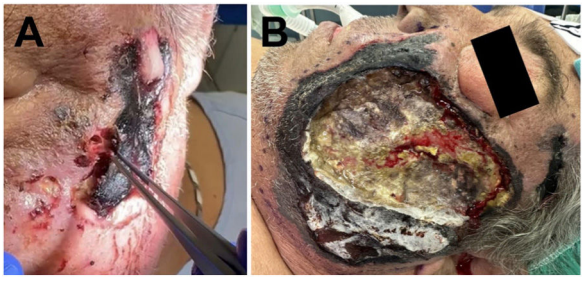

Fig. 1. (A) Necrotic plaque in the left malar region with two points of spontaneous oozing observed on physical examination of the patient in the Accident and Emergency department. (B) Image of the lesion prior to surgical debridement.

Clinical course and diagnosis

On the fourth day of admission, the culture of the sample taken in the Accident and Emergency department isolated the usual microbiota of this site together with a filamentous fungus with macroscopic and microscopic morphology suggestive of Mucorales (Fig. 2). Treatment with liposomal amphotericin B 600 mg/24 h (5 mg/kg/24 h, adjusted for weight and height) was initiated. On the sixth day and after general worsening, the dose of amphotericin B was increased (10 mg/kg/24 h) and isavuconazole 200 mg/24 h was added (preceded by six 200 mg/8 h loading doses). Finally, urgent surgical debridement was performed and skin biopsies taken and sent to microbiology and pathology, revealing fungal structures throughout the thickness of the sample with angioinvasion. On the ninth day of admission, and after further debridement, the patient's condition worsened, developing septic shock and multiple organ failure, and he died four days later.

After his death, the fungus *Saksenaea* spp. was identified by sequencing of the intergenic spacer region (ITS1). It could not be identified by direct colony mass spectrometry or from the liquid medium after enrichment in brain-heart infusion broth. Of the different culture media used, only water agar (1% agar in distilled water), the nutritionally poorest medium, was successful in inducing sporulation.

Saksenaea spp. is a filamentous fungus belonging to the phylum Zygomycota of the order Mucorales. Mucormycosis is currently the third leading cause of invasive fungal infection after candidiasis and aspergillosis. These infections are characterised by their tendency to angioinvasion, rapid progression and high morbidity and mortality.[1]

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* Corresponding author.
E-mail address: ander.uribarri.garcia@navarra.es (A. Uribarri García).

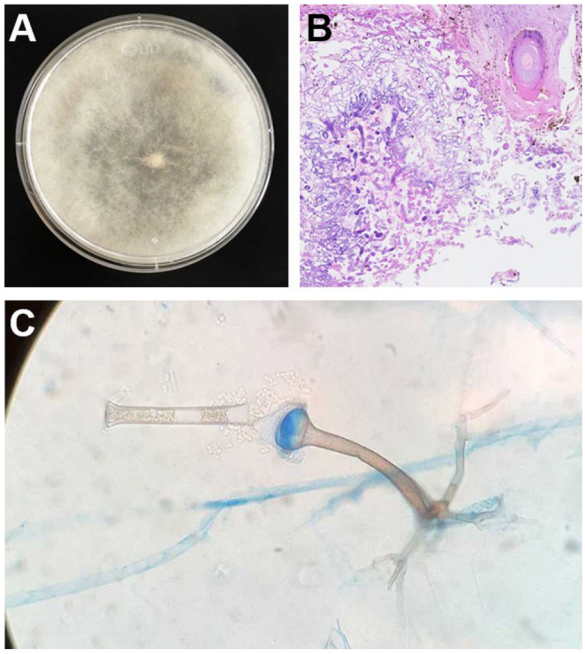

Fig. 2. (A) Front of a potato agar plate showing Mucorales growth after 72 h of incubation. (B) Histological section of the skin biopsy stained with Periodic Acid-Schiff showing hyphae and angioinvasion of the nearby vasculature. (C) Sporangiophores and rhizoids characteristic of *Saksenaea* spp. (stained with lactophenol blue).

Necrotising fasciitis is a progressive inflammatory infection of the fascia, the aetiology of which is usually bacterial and in some cases fungal. *Saksenaea* spp. of the order Mucorales is a ubiquitous fungus found in decaying organic matter, wood or animal excretions. It is characterised by the formation of simple vessel-shaped sporangiophores and pigmented rhizoids. It is an emerging pathogen associated with cutaneous or subcutaneous lesions. Colonies of *Saksenaea* spp. are fast-growing to 30°C, white, cottony and composed of aseptate hyphae branching at right angles. Classical microbiological identification is complicated, as it rarely forms reproductive structures and spores in culture media. Molecular methods may therefore be necessary for definitive identification.

Although mucormycosis mainly affects diabetic and immunocompromised individuals, *Saksenaea* spp. infections have been reported in immunocompetent subjects and individuals without risk factors.[2] In the case reported here, although the patient had no classical risk factors for mucormycosis, his multiple comorbidities may have had an impact on his immune status. The most common route of entry is by post-traumatic implantation or by arthropod bite, as in our case. Rectifying predisposing factors, early appropriate antifungal therapy and early surgical debridement are essential for a favourable clinical outcome. The antifungal of choice is liposomal amphotericin B, although isavuconazole and posaconazole are recommended as rescue treatments.[3]

In this case, we propose the fungus *Saksenaea* spp. as a possible aetiological agent of mucormycosis and necrotising fasciitis to be considered in our setting. We believe that the experience of our case can help other laboratories in the early and correct identification of this genus of the order Mucorales, optimising its clinical management.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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