

Thermotherapy in calcaneal infection due to *Prototheca wickerhamii*



Termoderapia en infección calcánea debida a *Prototheca wickerhamii*

Case report

We report a case of a 70-year-old man with personal history of atrial fibrillation treated by acenocoumarol anticoagulation therapy and Achilles tendinopathy treated by corticoanesthetic local injections.

The patient was diagnosed with Achilles tendon partial injury and was treated by autologous platelet rich plasma (PRP) injection. He presented postoperative local haematoma without other complications.

One month later he complained of pain in his right heel and physical examination showed local swelling. He had no fever or other systemic symptoms. Blood work was normal.

Treatment with amoxicillin 500 mg/8 h during 2 days was followed by cloxacillin 1 g/6 h, after a month there was no clinical response and surgical debridement was performed. Culture samples of the affected area were taken during surgery.

The sample was cultured for bacteria and fungi. After 72 h of incubation at 37 °C in a Sabouraud with chloramphenicol agar plate the soft, wet, yeast like, white-to-light-tan colonies were observed. Gram stain revealed spherical grampositive organisms. They were identified as *Prototheca wickerhamii* by Matrix-Assisted Laser Desorption Ionization-Time of Flight mass spectrometry (MALDI-TOF) (Bruker Daltonics®), Identification at species level was performed by sequencing 18S, ITS, 28S, LSU and 16S genes. (Banco español de algas).¹

Oral rifampicin 300 mg/12 h was added to cloxacillin treatment, observing clinical improvement at day 10.

Two months later the patient was admitted again, presenting swelling and three fistulous tracts with mild purulent serohaematic drainage. Several samples were cultured and in all cases *P. wickerhamii* was isolated. New treatment regimen was attempted with oral posaconazole 200 mg/6 h and oral cloxacillin 1 g/6 h for 20 days without satisfactory results. Surgical debridement was performed again and amphotericin B was added to the treatment and suspended because of an acute allergic reaction. Teicoplanin 240 mg/24 h IV and ceftriaxone 1 g/24 h IV were added to the treatment during 7 days with unsatisfactory results.

Due to the low response to classical treatments, the patient was treated with local thermotherapy at 55 °C, with heat blanket over clothes all day, as well as oral posaconazol 200 mg/6 h and oral doxycycline 100 mg/12 h during 15 days. The symptoms decreased until total remission and the patient was discharged twelve days later. After three years follow-up, there have been no recurrences.

Discussion

Prototheca it is currently classified among the lower algae, the *Chlorophyceae*. *Prototheca* spp. exist in the environment as ubiquitous detritus and contaminants. Their role as human pathogen is rare, but there have been increasing reports among immunocompromised individuals and in those with history of traumatic inoculation into subcutaneous tissues as in our patient's case.²

Findings in electron microscopy suggest that the phagocytic ability of macrophages might play an important role in the pathogenesis of the disease.³

Prototheca spp. cause a wide range of infections in humans as cutaneous infections, olecranon bursitis and disseminated disease.⁴ Some successful treatments have been reported in literature, like systemic or local antifungals, antiseptics, antibiotics, and even surgical excision. Even though treatment failure is not uncommon.

Boyd et al. reported that the *in vitro* growth of *P. wickerhamii* is inhibited at 40 °C⁵ and Nanakamo et al. reported the first case that showed complete resolution after thermal adjuvant therapy.³ Based on this report and in our experience, we believe that heat may help in the treatment of human protothecosis.

Funding

None declared.

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgement

To Dr. Juan Manuel Diaz Romero for his contribution in carrying out this work.

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2529-993X/

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