

Multifocal cutaneous protothecosis in a patient with myelodysplastic syndrome

Dear Editor,

A 75 years old man was referred with three centrally ulcerated, inflammatory cutaneous-subcutaneous nodules up to 3 cm in diameter, on the right shin, left ankle and left forearm which had appeared consecutively during the previous three months. His medical history included myelodysplastic syndrome, type 2 diabetes mellitus and atrial fibrillation on lenograstim, erythropoietin, methylprednisolone (16mg/day), danazol, folic acid, metformin, pantoprazole, digitalis, clopidogrel and furosemide. A skin biopsy showed a suppurative inflammatory infiltrate surrounded by granulation tissue with some multinucleate giant cells and PAS-positive round-oval microorganisms that occasionally aggregated to build "morula" arrangements suggestive of *Prototheca* infection¹. In sabouraud dextrose agar tissue specimen cultures were negative, probably as the result of *Staphylococcus aureus* overgrowth and preceding topical gentamicin application. Chest and abdomen CT scans and ophthalmologic evaluation did not disclose any extracutaneous involvement.

Based on host factors, clinical presentation and histology 'multifocal cutaneous protothecosis' was diagnosed. The patient denied surgery and intravenous amphotericin B (0.8 mg/kg/day) was initiated. On day 7 an acute myocardial infarction led to his transfer to the Coronary Diseases Unit, where the antifungal treatment was continued for two additional weeks. Six weeks later, he was readmitted with *Pneumocystis jirovecii* pneumonia. With the prospect of controlling relapsing protothecosis, caspofungin (70mg initially; 50mg daily thereafter) was administered. Pneumonia and the skin lesions resolved within two weeks. The patient died from progressive bone marrow insufficiency 6 months later without relapse of cutaneous disease.

Protothecosis is a rare, cosmopolitan infection caused by the opportunistic achlorophyllic algae of the genus *Prototheca* (family Chloracellea), typically resulting from traumatic inoculation of the alga from environmental reservoirs¹. Cutaneous protothecosis, the most frequent clinical presentation form of the disease is almost always prompted by immunosuppression, and is usually treated by amphotericin B and/or surgical excision.¹ Caspofungin is currently indicated for *Candida* and *Aspergillus* systemic infections while it is also highly active against *Pneumocystis jirovecii*². The presently observed efficacy of caspofungin for protothecosis could be partly attributed to the 10-20% $\beta(1,3)$ -D-glucan of *Prototheca* cell wall,³ despite of the reported in vitro ineffectiveness of this drug against strains of *Prototheca zopfii*⁴. Although standard treatment regimens have yet to be defined (including required total duration of treatment, as anticipated by the present observation), amphotericin B remains the most common therapeutic approach.

In conclusion, this case highlights that (a) protothecosis, however rare, should be suspected in immunosuppressed patients with indolent ulcerous-nodular skin lesions and (b) clinical efficacy of caspofungin in human protothecosis should be further evaluated.

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