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Cryptococcosis as a cause of nephrotic syndrome? A case report and review of the literature

Regev Cohen[a,b,*], Frida Babushkin[a], Maurice Shapiro[c], Ronen Ben-Ami[d,e], Talya Finn[a]

[a] Infectious Diseases Unit, Sanz Medical Center, Laniado Hospital, Netanya, Israel
[b] The Ruth and Bruce Rappaport Faculty of Medicine, Technion, Haifa, Israel
[c] Intensive care unit, Sanz Medical Center, Laniado Hospital, Netanya, Israel
[d] Sackler School of Medicine, Tel-Aviv University, Tel-Aviv, Israel
[e] Infectious Diseases Unit, Tel-Aviv Sourasky Medical Center, Tel-Aviv, Israel

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ABSTRACT

We present a case of a 74 years old male with cutaneous cryptococcosis of the right forearm. *Cryptococcus neoformans* var. *neoformans* was cultivated from the skin and from the bloodstream. He was diagnosed with nephrotic syndrome (focal segmental glomerulosclerosis) 21 months prior to admission, which was steroid-dependent. He was treated with prednisone and cyclosporine A. Concurrently with his renal disease he was also diagnosed as having disseminated severe tinea mannum, tinea corporis and tinea cruris; onychomycosis, skin eczema and psoriasis. After a prolonged course of anti-fungal therapy, his skin lesions as well as his nephrotic syndrome recovered completely. Follow up after 7 months without any anti-fungal or immunosuppression showed no skin or renal recurrence. We assume that the renal disease was related to the pre-existing cutaneous cryptococcosis, aggravated by immunosuppression, and discuss the close association between cutaneous cryptococcosis and nephrotic syndrome, as well as similar case reports in the literature.

Introduction

Cryptococcus neoformans and *Cryptococcus gattii* are important opportunistic fungal infections, commonly causing meningitis and pneumonia among immunocompromised hosts, but also among immunocompetent patients. The infection spectrum is wide and includes virtually any organ. Skin infection is common among patients with disseminated disease and fungemia, but primary cutaneous cryptococcosis (PCC) may also occur, typically among immunocompetent hosts commonly resulting from a direct inoculation of the skin. Cutaneous cryptococcosis may appear as almost any type of skin lesion and may pose a diagnostic challenge.

We describe a patient who had a misdiagnosed, disseminated and long-standing cryptococcal skin infection, which after a minor skin trauma developed PCC. He was also immunosuppressed due to nephrotic syndrome (NS) and its related drug therapy. We discuss the association and even the possible causality between cutaneous cryptococcosis and NS, and review the current literature and similar case reports.

Case description

A 74 year-old, HIV negative patient was admitted to the hospital due to right forearm cellulitis after an abrasion several days earlier. His past medical history included NS diagnosed 21 months prior to admission, with renal biopsy showing diffuse podocyte effacement and glomerular tuft collapse compatible with focal segmental glomerulosclerosis (FSGS). He was steroid-dependent and at admission he was on his third course of prednisone tapering (35 mg/day). Cyclosporine A (CSA) was added four weeks earlier. He also had dilated cardiomyopathy and was under warfarin treatment. Concurrently with NS, he was also diagnosed as having disseminated severe tinea mannum, corporis and cruris, onychomycosis, skin eczema and psoriasis.

On admission he was febrile and dyspneic and had cellulitis with pus-draining sinuses on the right forearm resembling bacterial infection (Fig. 1), and ipsilateral tender axillary lymphadenopathy. He also had multiple psoriatic-like, round superficial lesions on the limbs and trunk (Figs. 2 and 3) and thick and scaly skin on both palms. There were no neurological signs or symptoms. After two days of antimicrobial treatment, blood and wound cultures came back positive for yeast identified as *Cryptococcus neoformans* var. *neoformans*.

* Corresponding author at: Infectious Diseases Unit, Laniado Medical Center, 16 Divrei Haim St. Kiryat Sanz, 4244702 Netanya, Israel.
E-mail address: regevc@laniado.org.il (R. Cohen).

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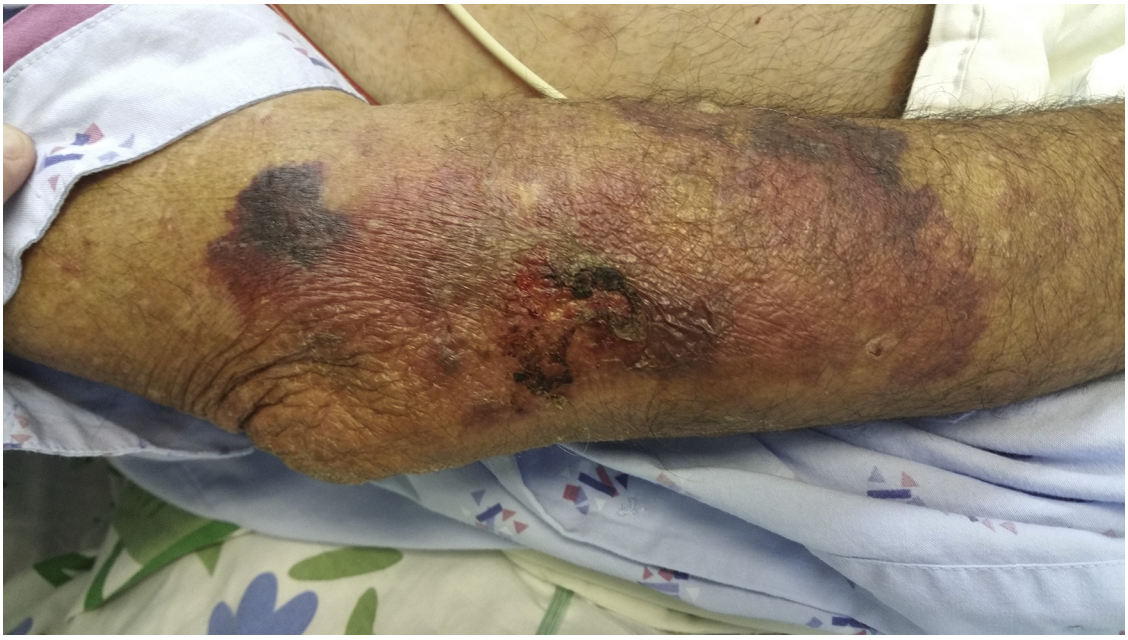

Fig. 1. Cryptococcal cellulitis, right forearm.

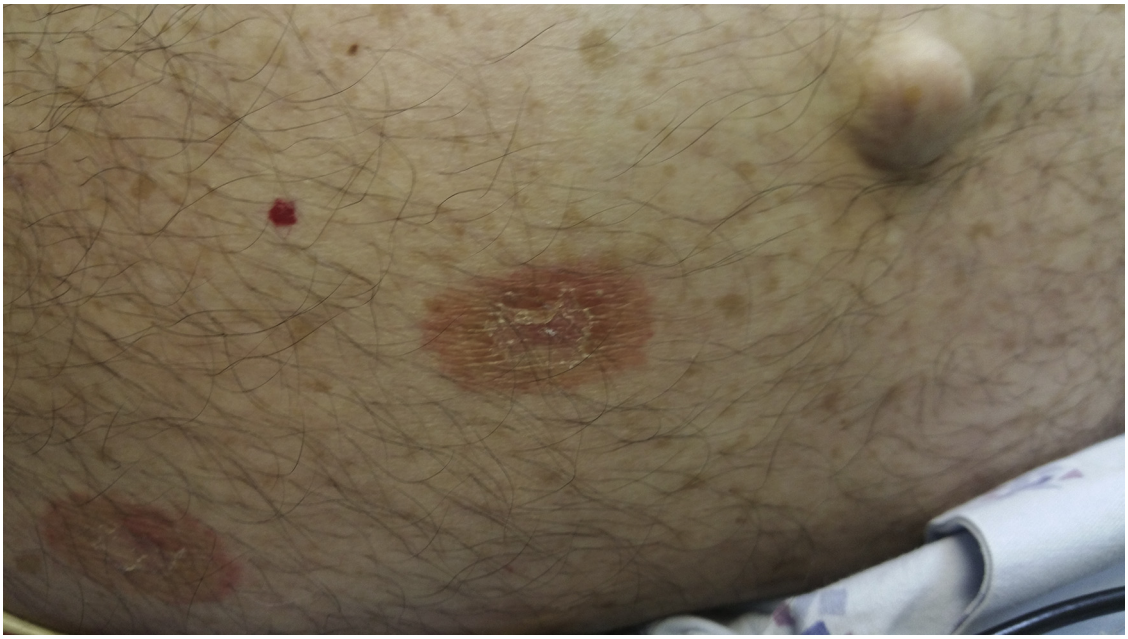

Fig. 2. Abdominal cutaneous lesions diagnosed as psoriasis.

He was transferred to the intensive care unit (ICU) and treated with liposomal amphotericin B (LAMB) (3 mg/Kg) and intravenous fluconazole (400 mg/day). Prednisone dosage was reduced to 30 mg/day and CSA was continued. Whole body CT revealed only mild bilateral pulmonary ground glass opacities. Cerebrospinal fluid (CSF) was without cells, normal glucose and protein levels and culture negative. Cryptococcal antigen was negative from the CSF, and weakly positive (1:10) from the blood. *C. neoformans* was further cultivated from the blood again four days after admission.

After 14 days of combination therapy, the right forearm wound healed and oral fluconazole (400 mg/day) was given. He was discharged a week later but returned after five days with proximal muscle weakness and cramps and was re-admitted to the ICU. He had rhabdomyolysis (creatine kinase (CK) 3358 IU/L), acute kidney injury (creatinine 4 mg/dL) and bilirubin (2 mg/dL) and hepatocellular liver enzymes elevation (GOT 160 IU/L, LDH 1063 IU/L).