Cutaneous Mucormycosis In a Kidney Transplant Patient: A Case Report.

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INTRODUCTION

Mucormycosis is a rapidly progressing mycotic infection and is associated with high morbidity and mortality in immunosuppressed patients. Invasive fungal infections (IFIs) occur in up to 20% of recipients of renal transplantation (RT) and remain a diagnostic and therapeutic challenge. We present the case of a kidney transplant patient with cutaneous mucormycosis that was a fatal evolution.

CASE REPORT

It's about a 38-year-old man with a history of chronic renal failure, tuberculous pleurisy in 2017, a kidney transplant in 2019 from a related living donor with post-transplant evolution marked by the new-onset diabetes, repeated urinary tract infections and diarrhea. On the 7th of January 2021, the patient presented to the emergency room with diabetic ketoacidosis and an infected post-traumatic skin lesion in the left foot, treated successfully with Amoxicillin-clavulanate and Fucidin. On the 17th of January 2021, the patient presented with fever associated to a lower right jugal ulcerated lesion following a skin irritation (Figure 1). The lesion evolved rapidly and formed painful erythematous swelling on the right side of his face in three days.

Physical examination revealed a right-sided peripheral facial paralysis (Figure 2) and an ulcero-necrotic lesion in relation to the mandible with local inflammatory signs extended up to the mandibular angle and in lateral cervical region with infiltrations of the soft parts; without collection. Laboratory findings were: white blood cells: 6330 /mm3 ; hemoglobin ; 9.8 g/dL; and platelets: 379 × 100 /mm3. Blood chemistry documented: arterial blood gas: pH : 7.34, pCO2 : 18, HCO3- : 9.7, pO2 : 115, saO2 : 98 % ; glucose: 35 mmol/l, blood urea nitrogen (BUN) : 12,2 mmol/l ; creatinine : 147 µmol/l ; C-reactive protein : 129 mg/dL ; HBA1C : 7,4 % ; serum ferritin: 380,6 ng/ml ; and urinary chemistry: glucose +++, ketone +++.

Fungal and bacterial culture were initially negative in the lesion. Soft tissue ultrasound showed no parotid collection except a diffuse oedematous infiltration. The management of diabetic ketoacidosis has been initiated. An empirical treatment based on Teicoplanin, Imipenem and Metronidazole was started, in addition to surgical debridement, a complete excision and coverage of the lesion.

Direct mycological examination from the skin biopsy of the right jugal ulcerated lesion showed numerous large and non-septal hyphae (Figure 3). Fungal culture in Sabouraud media grew white and gray mycelia colonies. Microscopically, the fungi were identified as *Rhizopus arrhizus* (Figure 4). Histopathological findings revealed broad and non-septate hyphae branching at 90 degrees (Figure 5), accompanied by numerous neutrophils and histiocytes within granulation tissue.

Special stains with periodic acid-Schiff (PAS) and Grocott-Gomori methenamine-silver (GMS) highlighted fungal hyphae. The diagnosis of mucormycosis was retained. The evolution was marked by sudden death on the second hospital day. PCR SARCOV2 on post-mortem was negative.

Figure 1 : Right jugal ulcerated lesion with necrotic centre 3*3 cm and surrounding induration

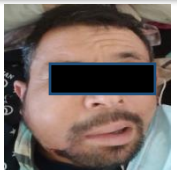

Figure 2 : Peripheral facial palsy

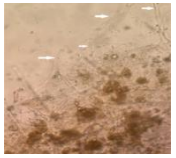

Figure 3 : The direct revealing the presence of wide and irregular non-septate hyphae (5–25 µm) (40x)

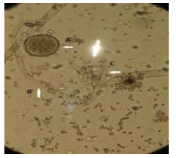

Figure 4 : Fungal culture *showing Rhizopus arrhizus.*
A. Sporangium
B. Sporangiophore
C. Rhizoids (40x)

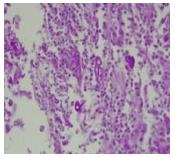

Figure 5 : PAS staining highlighting broad aseptate fungal hyphae (×400)

DISCUSSION & CONCLUSION

Mucormyocosis is an opportunistic mycotic infection caused by fungi in the class Zygomycetes, most commonly in the order Mucorales. It is currently considered to be the third most common invasive mycosis after candidiasis and aspergillosis. Its incidence has increased in recent decades in relation to the wider availability and use of immunosuppressant drugs but also because of metabolic diseases, such as diabetes mellitus [1]. Mucormycosis rates of post-transplant fungal infections is approximately 2–14% [1]. Risk factors for infection include diabetes, old age, hematologic malignancy, stem cell or solid organ transplantation, immunosuppression, graft-versus-host disease, and desferoxamine therapy [2]. Patients with poorly controlled diabetes mellitus, particularly those with diabetic ketoacidosis, carry a heightened susceptibility to this infection. Renal transplant recipients are at a high risk of contracting opportunistic infections because of immunosuppresion with cytotoxic drugs and steroids, prolonged antibiotic therapy, granulocytopenia and metabolic factors such as uremia, hyperglycemia, and poor nutrition [3]. Cases of mucormycosis have been reported after minor skin trauma (laceration, burn, abrasion, insect bite, or tattoo), intramuscular injection, and after the use of contaminated commercial elastic dressings. hematogenous spread rarely may cause cutaneous mucormycosis. We assume that fungal colonization in our patient occurred following the shaving. The diagnosis of fungal mucormycosis in transplant patients is extremely difficult, due to the lack of serologic tests and the difficulty to isolate and grow the organism from infected tissue, blood, and body fluids.

Early diagnosis is critical because of the rapid progression of this disease and is made on clinical impressions confirmed by microscopic examination of the biopsy specimen. When our patient was admitted, he had an advanced infection. He died on the second hospital day.

Mucormycosis is a fungal infection with high mortality in RT patient. Surgical debridement combined with antifungals (amphotericin B formulation and posaconazole) can significantly improve patient's overall survival.

Clinicians should increase precautions to mucormycosis in RT recipients.

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