Gastric mucormycosis: An unusual transplant infection

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INTRODUCTION

Mucormycosis, an infection caused by fungi of the class zygomycetes, order mucorales, is usually found in immunocompromised patients, with disease manifestations differing for each of the underlying condition. The rhinocerebral form can be found most often in diabetic patients,¹ the pulmonary and disseminated manifestations are in association with hematological malignancies²⁻³ and the gastrointestinal form of the disease is primarily found in patients suffering from extreme malnutrition. Mucormycosis has also been recognized in patients requiring hemodialysis,⁴ and in immunosuppressed patients following organ transplantation.⁵

Gastric mucormycosis is a rare disease with a reported fatal outcome of 98%.⁶ Manifestations range from colonization of peptic ulcer to infiltrative disease with vascular invasion and dissemination.⁷

CASE REPORT

A 58-year-old male underwent live unrelated kidney transplantation in December 2012. He had developed end-stage renal disease as a result of diabetic nephropathy and had commenced maintenance hemodialysis 12 months earlier. He was on triple immunosuppressive drugs included steroids, tacrolimus and MMF. He presented with massive amount of blood in vomitus. His CMV status was negative. Hepatitis B and hepatitis C were negative. His Tac level was 10.

His ultrasound whole abdomen was done which showed fatty liver no evidence of ascites was there. Upper GI endoscopy was performed which showed large ulcer involving antrum and distal body of stomach.

Histological examination of gastric biopsy showed areas of ulceration and necrosis with inflammatory granulation, within areas of necrosis are seen many broad aseptate fungal hyphae of mucor (Figure 1). Helicobacter pylori and other microorganisms were absent.

Since a fungal etiology of the gastric ulcer was established, daily intravenous treatment with amphotericin B at 1 mg/kg of body weight was initiated. The serum creatinine level increased to a
After a review of the literature, we found that species identification of the fungi by culture has been completed only for a minority of patients. Isolation of *Rhizopus oryzae* has been reported only once, from a perforated stomach wall of an infant (32 weeks of gestation) with respiratory distress syndrome, sepsis, and a nasogastric tube.\(^{[11]}\)

Several risk factors might have favored this rare infection in our patient. Uremia implies alterations in the immune system, with granulocyte dysfunction and depressed cell-mediated immunity.\(^{[12]}\) Normal human serum inhibits the growth of *Rhizopus* spp.,\(^{[3]}\) while the sera of uremic patients decrease the inhibitory effects of macrophages on spore germination.\(^{[9]}\) Furthermore, metabolic acidosis, another feature of uremia, increases the availability of iron, which is a known growth factor for *Rhizopus* spp. Antirejection therapy with high doses of corticosteroids could have exerted an additional important risk factor.

Therapy of mucormycosis with amphotericin B remains standard. Currently applied azole derivatives do not appear to be effective,\(^{[13]}\) despite a single report of a cure of invasive gastrointestinal mucormycosis in a patient with AIDS achieved with ketoconazole.\(^{[11]}\) Surgical intervention was also considered for our patient. However, the stable clinical condition, an early causative diagnosis and treatment, as well as frequent gastroscopic follow-up examinations justified an attempt for conservative management.

**CONCLUSION**

This is a rare case of invasive gastric mucormycosis localized exclusively in the stomach. The stable clinical condition, an early causative diagnosis and treatment, as well as frequent gastroscopic follow-up examinations justified an attempt for conservative management.

**REFERENCES**

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