Gangrene of the anterior abdominal wall after orthotopic liver transplantation: invasive cutaneous candidiasis

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Summary: Fungal infections following liver transplantation are not uncommon and may be life-threatening. Superficial candidal infections of the bronchus, oesophagus and urinary tract are the most common mode of presentation. Invasive cutaneous and subcutaneous candidiasis is, however, very rare. We report two patients with invasive cutaneous and subcutaneous candidiasis after orthotopic liver transplantation.

Introduction

Invasive fungal infections have become an increasingly important problem following orthotopic liver transplantation (OLT), being reported in up to 42% of these patients. Eighty-five per cent of these infections develop within 2 months of transplantation. Fungal infections appear to be a particular problem following liver transplantation compared with heart, lung and renal transplants, and are a significant factor in determining outcome. Although superficial fungal infections of the bronchus, oesophagus and urinary tract are not uncommon after liver transplantation, there has been no report of invasive cutaneous and subcutaneous fungal infection associated with skin necrosis. We report two patients with histological evidence of skin necrosis secondary to invasive candidal infection.

Patients

Case 1

A 48 year old man presented in 1980 with alcoholic cirrhosis and hepatic decompensation precipitated by bleeding oesophageal varices and was successfully treated by injection sclerotherapy. He was readmitted in 1990 with jaundice and hepatic encephalopathy and was referred for orthotopic liver transplantation (OLT) which he underwent in March 1991. The total operative time was 7 hours and the operative blood loss was 3 litres. His postoperative recovery was complicated by continuing bleeding requiring 2.5 litres of blood transfusion, pulmonary hypertension, renal failure and confusion. He developed early severe acute cellular rejection which did not respond to conventional boluses of methyl prednisolone and because of deteriorating liver function was retransplanted as an emergency on day 10. The explanted liver appeared cholestatic and the left hepatic artery was thrombosed. Following the retransplant he received standard immunosuppressive therapy of cyclosporin A, azathioprine and methyl prednisolone.

Seven days after retransplantation a rapidly progressive necrotic area appeared at the site of the abdominal drain. Despite treatment with vancomycin, ciprofloxacin, amoxycillin and metronidazole, the superficial gangrene spread rapidly. A necrotic tissue covering an area 20 cm × 15 cm was excised. Staphylococcus epidermidis, Enterococcus faecalis and Candida albicans were isolated from the cultures of the excised material. Histological examination revealed Candida invading the skin and subcutaneous tissue (Figure 1). Candida was also isolated from swabs from the oral cavity, the left axilla and an indwelling urinary catheter tip. He was treated with intravenous amphotericin B, vancomycin, flucloxacinil, metronidazole and gentamicin and he subsequently recovered. The wound was closed by secondary suture and it healed over a period of 3 weeks. The patient was discharged 8 weeks post-transplant with good graft function.

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**Discussion**

Invasive fungal infections are associated with significant morbidity and mortality after OLT.\(^1\)\(^-\)\(^3\)

The most frequent pathogens are *Candida* and *Aspergillus* species, but occasionally *Cryptococcus*, *Fusarium* species or other unusual fungi may be responsible for infection in debilitated or immunosuppressed patients. *Candida* accounts for approximately two thirds of infections after OLT, but *Aspergillus* infection appears to carry a worse prognosis.\(^7\) The usual source of the fungi is from the gastrointestinal tract and infection is associated with deranged reticulo-endothelial function.\(^4\) Fungal invasion is invariably preceded by evidence of colonization of the upper respiratory tract, urine, wound, abdominal drains and urinary catheters.\(^5\) Fungal infection has also been reported as a common but often unrecognized complication of acute liver failure.\(^6\) This population has defective cell-mediated immunity which predisposes to infection and there is an association with the use of invasive monitoring and broad-spectrum antibiotic therapy. Early diagnosis of fungal infection is often difficult and definitive diagnosis of invasive fungal infection depends on the histological demonstration of the organism in the affected tissue.\(^7\)

Identified risk factors for fungal infection after liver transplantation include retransplantation, tracheal reintubation, bacterial infection, massive intra-operative blood transfusion, urgent-listed cases, the number of steroid boluses, vascular complications, the use of Roux loop for biliary reconstruction,\(^1\) prolonged courses of systemic antibiotics and prolonged length of operation.\(^2\)

Several of the above factors were present in both these cases.

Bronchial, oesophageal and urinary tract are the common sites of superficial fungal infection. A review of recent literature showed no cases of invasive cutaneous and subcutaneous candidiasis, although disseminated systemic infection was found in a significant percentage of patients.\(^2\)\(^,\)\(^5\)\(^7\)

These two cases are reported to highlight a rare manifestation of a common fungal infection in the post-transplant patient.

## References

