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CLINICAL CASE

Using free flaps for reconstruction during infections by mucormycosis: A case report and a structured review of the literature[☆]



Place des reconstructions par lambeaux libres au cours d'une infection par mucormycose : rapport d'un cas et revue structurée de la littérature

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Summary

Background. — Mucormycosis is a very rare infection caused by fungi from the order Mucorales, it rarely involves the skin. We report a case of necrotizing fasciitis of the upper limb which required an aggressive surgical debridement, antifungal therapy and coverage of the defect with a free DIEP flap, a review of the literature was also done regarding indications of reconstruction with free flaps.
Case presentation. — Here we present a case of cutaneous mucormycosis of the right upper limb in a 49-year-old immunocompetent woman after having an open fracture associated with massive contamination during a motor vehicle collision. In early postoperative period, she had multiple skin necrotic lesions. Serial surgical debridements were performed and ended up with inter-scapular-thoracic amputation associated with a total mastectomy. Following diagnosis confirmation of mucormycosis infection, the patient was started on antifungal therapy for several months. After disease control, the large defect was successfully covered by a DIEP flap.

Conclusion. — Cutaneous mucormycosis requires antifungal therapy along with aggressive debridement, reconstruction by a free flap seems to be a good solution to cover these large defects.
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MOTS CLÉS

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Résumé

Introduction. — La mucormycose cutanée est une infection rare causée par des champignons de la classe des Mucorales, elle touche rarement la peau. Nous rapportons le cas d'une fasciite nécrosante du membre supérieur droit qui a nécessité des parages extensifs répétés, une thérapie antifongique et une couverture par lambeau libre de DIEP. Une revue de la littérature sur les indications de reconstruction par lambeaux libres dans ces situations a également été effectuée.

Observation. — Nous présentons le cas d'une mucormycose cutanée sur fracture ouverte du membre supérieur droit chez une patiente immunocompétente de 49 ans, victime d'un AVP. Peu après l'admission, celle-ci a présenté de multiples lésions cutanées nécrotiques. Plusieurs parages extensifs itératifs ont été effectués jusqu'à réalisation d'une amputation interscapulothoracique et une mastectomie droite. Après confirmation diagnostique d'infection à mucormycose, un traitement antifongique a été instauré pendant plusieurs mois. Après stabilisation du sepsis, la perte de substance a ensuite été couverte avec succès par un lambeau libre de DIEP.

Conclusion. — La mucormycose cutanée nécessite un traitement antifongique spécifique associé à un parage extensif et souvent répété de l'ensemble des tissus nécrotiques. Une reconstruction par lambeau libre semble être une bonne solution de couverture de ces larges pertes de substance.

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Introduction

Mucormycosis is a rare opportunistic infection caused by a fungus of the Mucorales order of the Zygomycetes class. They are ubiquitous and cosmopolitan fungi found in soil, air and plants. Clinical presentations are numerous, the most common forms being rhino-cerebral, pulmonary and cutaneous mucormycosis. All these forms can turn into a systemic disease by hematogenous dissemination. These pathologies are medico-surgical emergencies given the fulminant nature of their progression and the particular host they infect. Indeed, mucormycosis is an opportunistic infection associated with different degrees of immunodeficiency; decompensated diabetic ketoacidosis is the most common, but also organ transplantations, renal insufficiency, extensive burns and malnutrition are often associated. Currently, there is an increased number of these infections in two types of patients: highly immunocompromised patients treated with azoles not covering this type of infections and severe polytrauma patients with soft tissue infections even when being immunocompetent, as we have observed.

We report a case of right upper limb necrotizing fasciitis caused by mucormycosis in the aftermath of a polytrauma that occurred in Africa, in an immunocompetent patient. Management, nonetheless being early, was unable to avoid amputation of the arm with interscapular thoracic disarticulation and mastectomy. The defect was covered by a free abdominal Deep Inferior Epigastric Perforator flap (DIEP). By adding a long and an appropriate antifungal therapy the patient was able to recover. We conducted a systematic review of the literature regrouping indications of free flaps in these little known infections, yet characterized by exceptionally high morbidity and mortality.

Case presentation

We present the case of a 49-year-old female patient, who was previously healthy, who has been a victim of a high-velocity

road traffic accident in Africa. The primary assessment of the lesions showed a right temporal fracture, a bifocal fracture of the femur, a pelvic fracture and an open fracture of both bones of the right forearm, which was treated with reduction and external fixation in an emergency setting. She was transferred to our department 48 hours later for further management (Fig. 1). The next day, the patient had a low-grade fever associated with erythematous lesions and ulcers of the anterolateral aspect of the right forearm. The lesions quickly evolved into large necrotic patches which led to an extensive debridement in the operating room on the 4th day of her accident, in the immediate postoperative period the patient developed a septic shock requiring her transfer to the ICU. A triple antibiotic therapy was started (meropenem, amikacin and vancomycin). The following period was marked by a progressive local-state deterioration of her right upper limb. Four surgical debridement procedures were done once every two days without any clinical improvement (Fig. 2).



Figure 1 Preoperative view of the patient on the fourth day, before extensive debridement.

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