A Case of *Mucor Irregularis*-Associated Cutaneous Mucormycosis in the Forearm

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Case Report

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Abstract

A 61-year-old man developed rupture of the left forearm after cupping 1 year ago, which was partially improved after surgical dressing change. However, the lesion site recurred repeatedly since then and no cure was found. In the recent one month, he came to the hospital for treatment due to the increased area of skin rupture. The lesions involved subcutaneous tissue, reaching deep to the fascia layer, with large black mildew spots on the surface and necrosis like bean dregs in the deep part. The lesion was irregular in distribution, with different sizes and unclear boundaries. Blood blisters and papules could be seen on the skin at the edge, with partial rupture and hemorrhage.

Main Text

A 61-year-old man developed rupture of the left forearm after cupping 1 year ago, which was partially improved after surgical dressing change. However, the lesion site recurred repeatedly since then and no cure was found. In the recent one month, he came to the hospital for treatment due to the increased area of skin rupture. The lesions involved subcutaneous tissue, reaching deep to the fascia layer, with large black mildew spots on the surface and necrosis like bean dregs in the deep part. The lesion was irregular in distribution, with different sizes and unclear boundaries. Blood blisters and papules could be seen on the skin at the edge, with partial rupture and hemorrhage(Fig.1).

Laboratory studies showed a white blood cell count twice the normal level (normal, 3500–9500/μL) with normal liver and kidney function and immune function. After admission, debridement of the necrotic tissue was performed immediately and local tissue was sent to the laboratory for further examination. Microscopically, abundant rhizomes and mature sporangia of different sizes can be seen by lactophenol cotton blue staining (Fig.2c). The fluorescence showed many branching hyphae and spore sac visible at the branch end (Fig.2d).The ITS gene amplification band showed a single-purpose band, and sequencing results by BLAST showed that the pathogen was 100% similar to mucor Irregularis (GenBank Accession No. MN533717.1). Based on the clinical presentation, histological findings, morphological and genetic sequence comparisons, the patient was diagnosed as primary cutaneous mucormycosis caused by M. irregularis. We removed necrotic tissue daily with povidone iodine, hydrogen peroxide and surgical tools, wrapped the wound with amphotericin B (10mg) soaked gauze, intravenously used amphotericin B and gradually increased the dose. The initial dose was 5mg/ d and increased by 5mg/ d daily until the maximum dose was 25mg/ d. During the increase, the patient was constantly inquired and observed for adverse reactions. Weekly blood routine, liver and kidney function and electrolyte reexamination were also actively conducted. When increased to 25mg/L, the patient experienced adverse reactions including abdominal pain, diarrhea, nausea and headache. Then the dose was reduced and eventually stabilized at 5mg/ day. No other adverse drug reactions occurred. Intermittent fentanyl was used to relieve the patient’s pain while necrotic tissue was removed from the forearm. After 4 weeks of treatment, the laboratory indicators of all patients tended to be normal. Part of the marginal tissues were taken again for histology and microscopic examination, and no Mucor strain was found. The cumulative intravenous

dose of amphotericin B was 202mg during treatment. The patient then underwent multiple stamp grafts in plastic surgery. Four weeks later, the grafted skin survived and the patient was discharged.

In this case, the patient was treated for about eight weeks, including multiple skin grafts. It is important to note that the patient was initially thought to have a minor skin lesion and was not taken seriously by the doctor. Over the next year, the infection spread distally via vessels and resulted in extensive tissue necrosis of the forearm, which is very rare. Diagnosis based on early symptoms can be challenging. Once the diagnosis is clear, treatment includes early surgical debridement and amphotericin B.

Declarations

Compliance with Ethical Standards

Conflict of interest The authors report no conflict of interest.

Informed Consent Informed consent for case report and image report was obtained from the patient.

Figures

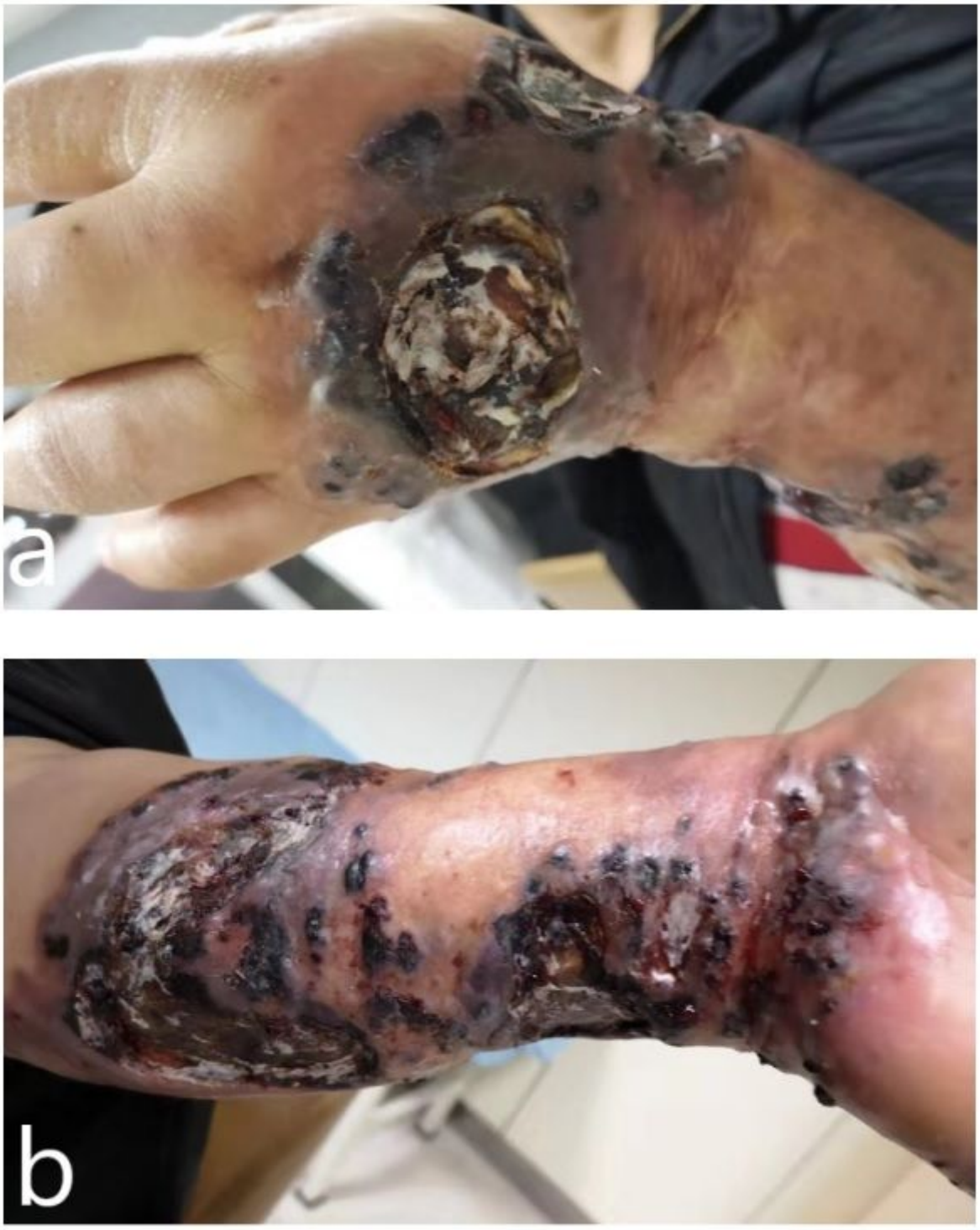

Figure 1

a On the dorsal side of the left hand, there were circular necrotic foci of different sizes, the largest being about 3cm*4cm, and purulent secretions in the center b On the palmar surface of the left forearm, there were many necrotic plaques of different sizes with irregular distribution, scabs and blood blisters on the margins

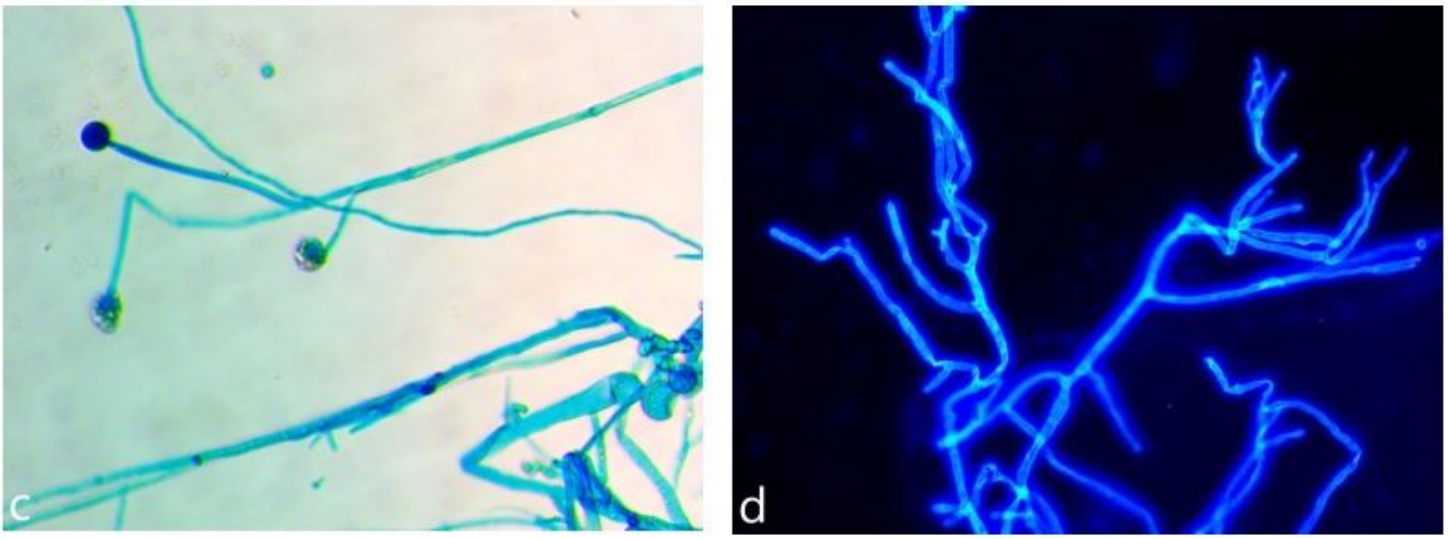

Figure 2

c Abundant and irregularly shaped rhizomes, branchlets varying in size with dark blue cysts (lactophenol cotton blue staining x200□□d The irregular multi-branched hyphae were observed under the microscope, and the branches showed different size cysts (fungal fluorescence x200□