

## Case 6

A 67-year-old Thai male from Chumphon province.

**Chief complaint:** Indurated slow-growing subcutaneous plaque on the back for 1 year



**Present illness:** The patient had developed solitary a small brownish indurated non-tender subcutaneous nodule on the back for 1 year. The lesion gradually grew into brownish mild tender indurated plaque sized 6 x 5 centimeters. There was no history of trauma. There was no symptom of weight loss, prolonged fever and chronic cough according to the patient. The patient is a farmer and had history of contacting soils and plants regularly for more than 10 years.

### Past history

He was previously diagnosed with subcutaneous phycomycosis for 10 years. The patient received fluconazole 200 mg 2 tablets once daily, which clinically improved the condition. Then, he was diagnosed with deep fungal infection for 2 years, which he underwent a surgical excision. He has no other underlying disease and no current medication.

### Physical examination

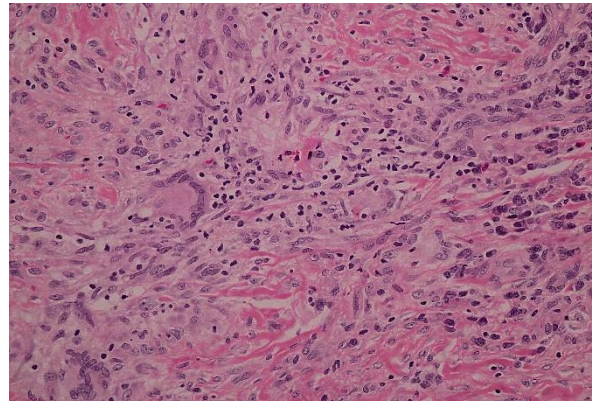
HEENT: Not pale, no jaundice

Lymph node: No palpable lymph node

Abdomen: No hepatosplenomegaly

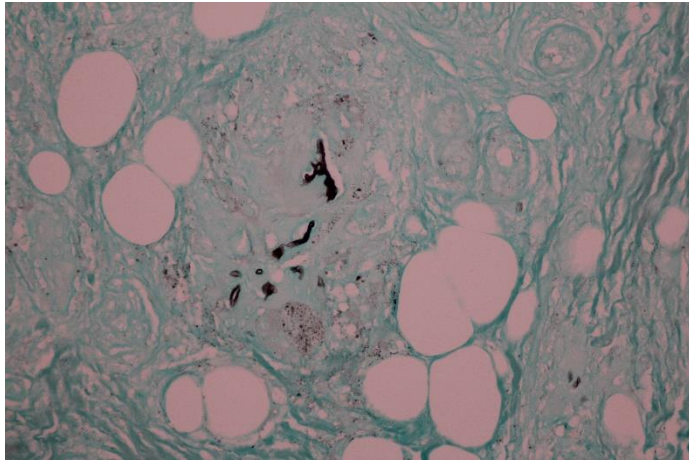
### Skin examination

Solitary well-defined brownish mild tender indurated plaque sized 6 x 5 centimeters with overlying brownish crust on the back.



### Histopathology (S15-05561, Back)

- Diffuse fibrosis and inflammatory cell infiltrate in entire dermis and subcutaneous tissue
- Inflammatory cell infiltrate composed of lymphocytes, histiocytes, multinucleated giant cells admixed with numerous eosinophils and plasma cells



**Special stain (S15-24605):** PAS and GMS highlight thin wall broad hyphae within cytoplasm of histiocytes

**Tissue culture for fungus:** Rhizopus microspores

**PCR:** Positive for Rhizopus microspores

**Diagnosis:** Subcutaneous zygomycosis

**Treatment:** Wide surgical excision

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**Discussion:**

The class Zygomycetes is divided into two orders, Mucorales and Entomophthorales. Mucorales causes acute, angioinvasive infections in immunocompromised patients with mortality rates exceeding 60%<sup>1</sup>. In contrast, Entomophthorales causes chronic subcutaneous infections in immunocompetent

patients from subtropical and tropical regions.

The terms phycomycosis and zygomycosis have previously been used to describe both forms of infections. However, it was suggested that the term 'mucormycosis' should be reserved for those infections caused by Mucorales, and the term 'entomophthoramycesis' for those caused by Entomophthorales<sup>2</sup>.

After aspergillosis and candidiasis, mucormycosis is the third most common invasive fungal infection<sup>3</sup>. It represents 8.3–13% of all fungal infections encountered at autopsy in haematology patients<sup>4,5</sup>. The most commonly recovered genera include Mucor, Rhizopus, Rhizomucor, Absidia, Apophysomyces, Cunninghamella, and Saksenaea<sup>3,6</sup>.

Five major forms of infections exist—rhino-orbito-cerebral, pulmonary, disseminated, cutaneous, and gastrointestinal. Mucorales enters human host through inhalation, percutaneous inoculation or ingestion<sup>7</sup>. Mucormycosis typically affects patients with immunocompromising states such as haematologic malignancy, neutropenia, receipt of high-dose corticosteroids, diabetes mellitus, diabetic ketoacidosis, organ transplantation, deferoxamine therapy, trauma and burns<sup>8,9</sup>. Immunocompetent patients, however, rarely develop mucormycosis<sup>10</sup>.

Cutaneous mucormycosis can develop after a break in the skin's integrity from surgery, burns, soiled trauma, motor vehicle accidents, bone fractures, intravenous lines, insect bites, cactus spine injuries, abrasions, lacerations, biopsy sites, allergen patch testing, contaminated adhesive tapes as well as intramuscular injections<sup>11,12,13</sup>. This form of infection is least likely to be associated with underlying disease<sup>12,15</sup>.

Cutaneous mucormycosis can manifest as a superficial or deep infection<sup>14</sup>. It can appear as pustules, blisters, nodules, necrotic ulcerations, ecthyma gangrenosum-like lesions or necrotizing cellulitis<sup>16</sup>. Skin biopsy is required for diagnosis.

Cultures and fungal stains of wound swabs are not sensitive, and could give misleading microbiological results.

The mainstays of treatment are antifungal therapy with an amphotericin B preparation, surgery, and correction of the underlying medical condition, if applicable. Amphotericin B is the only available antifungal agent with significant *in vitro* activity against Zygomycetes.

## References

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