

CASE REPORT

***Exophiala xenobiotica*, an opportunistic black yeast masquerading as a benign epidermoid cyst**

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**Abstract**

We present a case report of an unusual skin infection with *Exophiala xenobiotica* in a 56-year-old male who presented with a 1-year history of an asymptomatic lump on the right thigh. Excision biopsy revealed suppurative granulomatous inflammation with accompanying pigmented (dematiaceous) deep fungal infection. *E. xenobiotica* was cultured. This is a rare presentation which can be missed if tissue specimens are not sent for analysis.

*Tasman Medical Journal 2023; 5(1):xx-xx*

**Introduction**

Dematiaceous fungi can cause a variety of cutaneous and systemic infections in humans. They contain melanin or melanin-like pigments in their cell walls. The pigmented infections known as phaeohyphomycoses can affect both immunocompetent and immunocompromised individuals. Phaeohyphomycosis was first defined by Ajello *et al* in 1974.<sup>1</sup>

*Exophiala xenobiotica* grows in environments which are moist and hot and contain an abundance of toxic hydrocarbons.<sup>2</sup> In humans, *E. xenobiotica* is predominantly responsible for causing subcutaneous infections but has also been shown to infect blood, dialysis fluid, intra-ocular tissues and mucous membranes. Diabetes and ingestion of corticosteroids are recognised as important risk factors.<sup>3</sup> Systemic infections are uncommon.

Formal diagnosis requires special techniques of microbiology and anatomical pathology for confirmation.<sup>4</sup> For localized skin lesions treatment

with a combination of antifungal drugs and surgical debridement has been recommended.<sup>4</sup>

**Case Report**

The patient was a 56-year-old male with reportedly well-controlled type 2 diabetes (blood glucose values between 5 and 7 mmol/L) treated with metformin and gliclazide. There was no known deficiency of immune function and he was not taking corticosteroids. He presented with an irregular asymptomatic cystic lesion 2cm in length affecting the right lower thigh anteriorly. The lesion size had increased gradually over a year. No other lesions were present. He had an office-based job and denied any trauma or obvious environmental exposure. He was systemically well. Clinical differential diagnoses included epidermoid cyst, lipoma, pilomatricoma and an atypical fungal infection. Ultrasound appearance was non-specific but reported as suggesting a sebaceous cyst. The cyst was excised, at which point thick creamy yellow pus was noted. The majority of the lesion was sent for histopathology and a smaller portion was sent for fungal and bacterial

culture including atypical mycobacteria. The patient was treated empirically with flucloxacillin. Histopathology showed suppurative granulomatous inflammation with accompanying pigmented (dematiaceous) deep fungal infection (Fig 1a). Tissue

microscopy (Fig 1b) showed fungal hyphae and *E. xenobiotica* species was cultured (Fig.2). The sample was negative for other standard and atypical organisms. A swab from pus grew fungal hyphae but was negative for bacteria.

Fig 1a

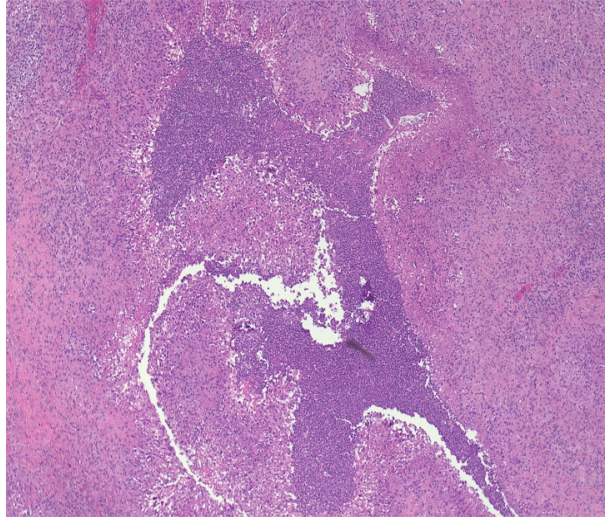
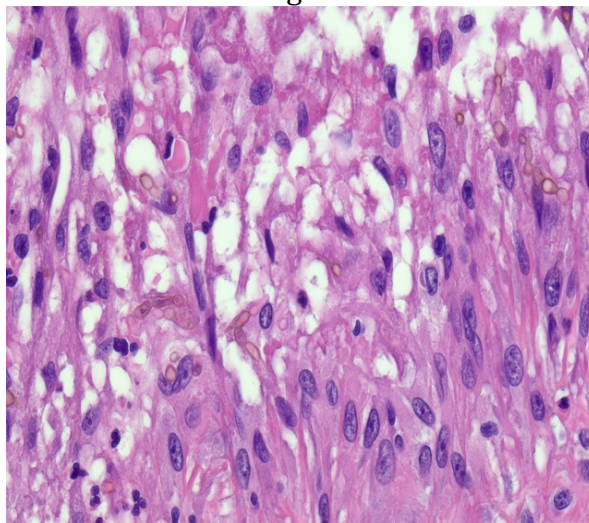


Fig 1b



After two weeks the wound had healed well. The patient was referred to an infectious disease physician who advised monitoring the site in view of complete cyst excision and the quiescent wound, as the side-effects of the drug treatment of choice (voriconazole) potentially outweighed the clinical benefit. The scar continues to appear stable three months after surgery (Fig.3).

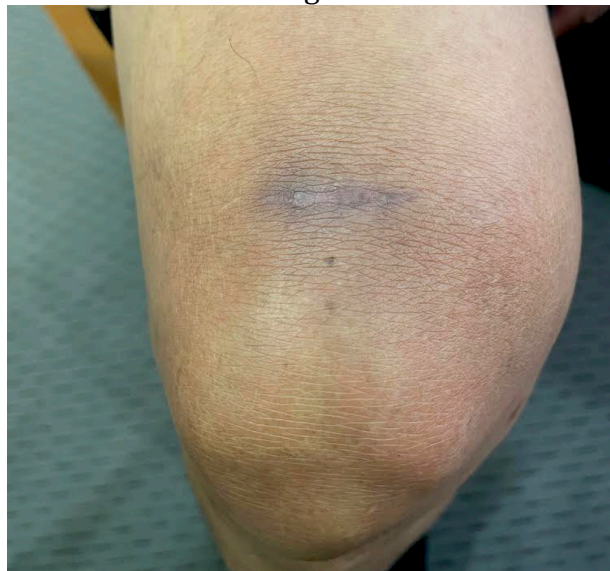
#### Discussion

*Exophiala* species are opportunistic black yeasts, widely distributed in the domestic environment in moist, hot, or extreme (micro) habitats such as Turkish steam baths, dishwashers, industrial biofilters, or environments enriched by toxic hydrocarbons.<sup>5</sup>

Fig 2



Fig 3



This genus is a member of the family *Herpotrichiellaceae* which encompasses more than 30 species.<sup>6</sup> The most prevalent species are *E. jeanselmei* and *E. dermatitidis*. *E. xenobiotica*, identified in 2006 as a segregant of *E. jeanselmei*, is uncommon and rare relative to the predominant species.<sup>1,7</sup> These organisms are notoriously difficult to classify and identify.<sup>7</sup> Literature suggests it has consistently been underdiagnosed in recent years, because of poor microbiological identification techniques and the discovery of multiple new species within the genus.<sup>2</sup>

*E. dermatitidis* manifests in four clinical forms: cutaneous, subcutaneous, systemic and cerebral

phaeohyphomycosis. The subcutaneous form is the most common presentation. It develops after traumatic implantation of fungi, especially on the extremities. Clinically it resembles benign skin and soft tissue neoplasms like lipoma, sebaceous cyst or neurofibroma. The infection has been reported to occur in immunocompetent patients.<sup>3</sup> Histopathology serves as a very useful tool in diagnosing these cysts by identifying the fungal elements.<sup>8,9</sup>

Surgical excision is the first choice for localized and well delineated *Exophiala* lesions. Most melanized fungi are susceptible to azoles, which makes itraconazole and voriconazole the main drugs used,

followed by amphotericin B. However, data on clinical management of *E. xenobiotica* infections is scarce and treatment is usually individualised.<sup>5,7</sup>

### Conclusion

Subcutaneous phaeohyphomycosis caused by *E. xenobiotica* is rare and can mimic benign skin and soft tissue cysts and hence should be on the radar of the treating dermatologist. Histopathological evaluation and culture play a major role in diagnosis and thus assist in appropriate patient management.

**Provenance:** Internally reviewed

**Ethical Approval:** Not required

**Disclosures:** None

**Acknowledgements:** None

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