

Short reports

Cutaneous *Scedosporium apiospermum* infection in an immunocompromised patient

C P R Bower, J D Oxley, C K Campbell, C B Archer

Abstract

Scedosporium apiospermum infection occurred in the left forearm of a patient who was taking oral prednisolone for pulmonary fibrosis. The infection appeared to follow a scratch from a blackcurrant bush. This is the first reported case in the United Kingdom of a cutaneous infection from *Scedosporium apiospermum* in an immunocompromised patient.

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Keywords: *Scedosporium apiospermum*; immune deficiency; cutaneous mycosis

Scedosporium apiospermum is a ubiquitous fungus that has been isolated from soil, polluted water, and sewage. Although it is the most frequent cause of true fungal mycetoma in temperate regions,¹ this has only been reported in six patients in the United Kingdom.² This type of localised chronic infection is typically found in immunocompetent patients and is characterised by induration associated with draining sinuses. The histological picture is of periodic acid-Schiff (PAS) staining septate hyphae (2-7 µm in diameter) found within abscesses, accompanied by granulomatous inflammation. Over recent years this pathogen has emerged as an increasingly common cause of disease in immuno-

compromised patients, with potentially devastating consequences.

Case report

An 81 year old man presented with a six week history of subcutaneous nodules on the left forearm. He attributed the onset of the initial lesion to a scratch he sustained while picking blackcurrants two weeks previously. Over the subsequent weeks, further nodules had developed proximal to the initial lesion in a linear distribution. Some of the nodules had ulcerated, discharging a light honey coloured exudate. He had a history of lung fibrosis of unknown aetiology, for which he had been taking oral prednisolone over many years, the dose of which had been increased to 40 mg daily one month before the development of the initial skin lesion. Other medical history included ulcerative colitis and renal impairment.

Examination revealed several tender subcutaneous nodules in a linear distribution on the left forearm, with boggy erythematous plaques, and a streak-like inflammation extending from the wrist to the elbow (fig 1). The left wrist was swollen. No regional lymph nodes were palpable. The patient was afebrile and other than the presence of crackles noted on chest auscultation there were no abnormal findings on physical examination.

An incisional skin biopsy was taken from one of the erythematous plaques. Sections revealed extensive fat necrosis in the subcutaneous tissue with large numbers of fat laden macrophages. Surrounding this and extending into the dermis was a granulomatous response, with large numbers of foreign body type giant cells. Fungal hyphae could be identified within the necrotic fat (fig 2), and fragments of hyphae were present within the giant cells (fig 3). The hyphae were septate and branching.

A sample of the incisional biopsy, in addition to gelatinous material from one of the subcutaneous nodules, was sent for mycological culture. From both of these samples *Scedosporium apiospermum* was isolated. Antifungal susceptibility testing by a broth dilution method in microtitre trays gave minimal inhibitory concentrations (MIC) of 0.5 mg/ml with itraconazole and miconazole. These results are considered sensitive at the PHLS Mycology Reference Laboratory, by comparison with

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Figure 1 At presentation. Erythematous plaques with streak-like inflammation and subcutaneous nodules extending up the left forearm in a linear pattern. Swelling of the wrist.

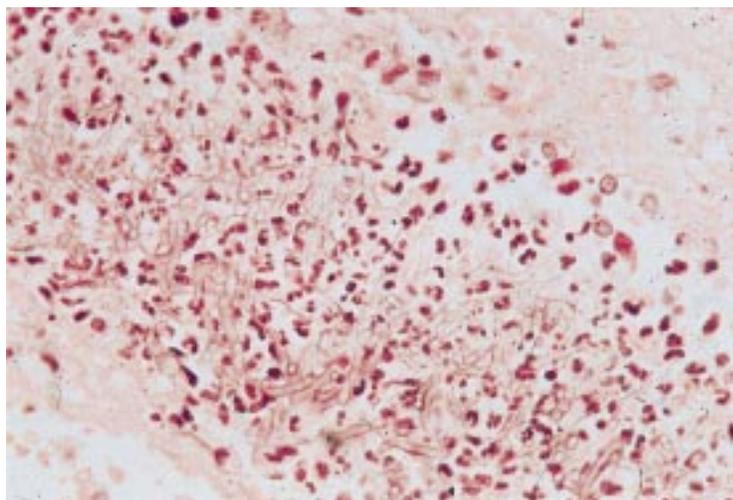


Figure 2 Haematoxylin and eosin stained section of lesion showing aggregates of septate hyphae in deep dermal aggregates, extending into the subcutaneous fat. ($\times 340$ magnification.)

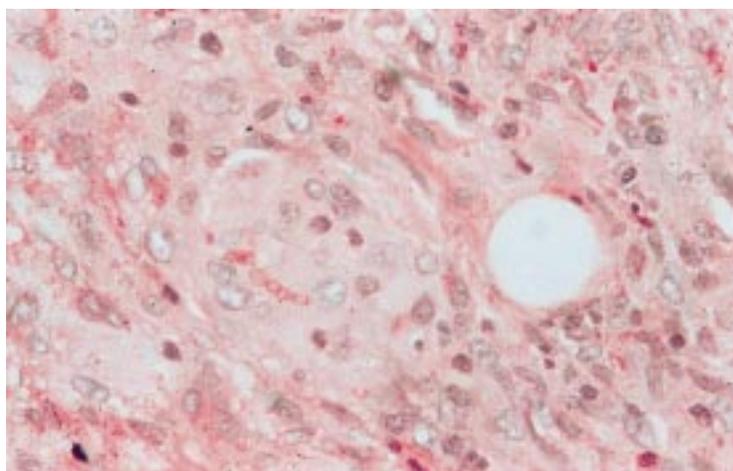


Figure 3 PAS stain of section of lesion showing thick branched hyphae within giant cells in the deep dermis. ($\times 500$ magnification.)

other mould pathogens. The organism showed MICs of 2.0 mg/ml to amphotericin and ketoconazole, both results being taken as indicating some resistance.

Itraconazole was started at a dose of 100 mg twice daily. The dose of oral prednisolone was reduced to 15 mg daily. After five weeks of treatment the subcutaneous nodules and overlying skin changes had resolved. However, the patient was kept under review and maintained on a low dose of itraconazole. Six months later he presented with a swollen tender left wrist with markedly impaired function. Magnetic resonance imaging showed a large fluid collection in the distal radio-ulnar joint. Surgical exploration revealed rupture of extensor pollicis longus tendon, accompanied by extensive synovitis. A large volume of melon seed type bodies emerged on opening the distal radio-ulnar joint. Culture of these bodies and of synovial biopsies yielded *Scedosporium apiospermum*.

Treatment with itraconazole continues, but in the knowledge that eradication of fungal infections from bone and joints can be extremely difficult, the possibility of future amputation has not been ruled out.

Discussion

Scedosporium apiospermum is a ubiquitous fungus with a worldwide distribution. *Scedosporium apiospermum* is the name used for forms showing asexual sporing structures. The name *Pseudallescheria boydii* is applied to the same fungus if the sexual state is present. In cultures from the present case only the asexual form was seen.

In recent years there have been increasing reports of cutaneous infections from *Scedosporium apiospermum* in immunocompromised patients. In these cases the organisms typically cause acute inflammation of the dermis or subcutaneous tissues, with erythema, subcutaneous nodules, and ulcer formation. From 1980 to 1998, 18 cases of cutaneous infections caused by *Scedosporium apiospermum* or *Pseudallescheria boydii* in immunocompromised patients have been reported,³⁻¹³ with the majority of cases being reported in the past four years (13 patients).⁶⁻¹³ Four patients were undergoing systemic steroid treatment, and five of nine patients had leukaemia.

Cutaneous infection with this opportunistic saprophyte is typically acquired following an injury or a surgical procedure. A recent study looking at the various fungal opportunistic pathogens of humans cultivated from potted plants within a hospital found *Scedosporium apiospermum* to be the most abundant pathogen in the plant soils.¹⁴ Our patient gave a clear history of trauma from a blackcurrant bush two weeks before the onset of skin changes and this is likely to have been the source of the fungal infection.

Although *Scedosporium apiospermum* infection most commonly manifests itself in the skin, osteoarticular, ocular, and visceral sites can be affected,¹ with dissemination and septicaemia being relatively rare. Treatment successes have been reported with the use of itraconazole.^{5-7,10} The organism is often resistant to amphotericin B (necessitating its distinction from aspergillus), usually susceptible to miconazole, and success has been reported in one case with voriconazole.^{4,6,9,13}

In summary, the emergence of infections with *Scedosporium apiospermum* and similar opportunistic organisms warrants a high index of clinical suspicion and biopsy of suspicious skin lesions. Long term follow up may be necessary to look for late complications, as occurred with the synovial involvement in our patient. Successful culture of the organism is necessary to confirm the diagnosis, as it is often not possible to differentiate between fungal organisms on histological appearances alone.

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