Self-assessment corner

A painful knee in an immunocompromised patient

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A 34-year old Turkish man underwent an allogeneic bone marrow transplant as treatment of his chronic myeloid leukaemia. Five weeks later he was re-admitted complaining of severe pain in his previously normal left knee. On examination he was pyrexial, the knee was warm and slightly swollen with a small effusion but had a normal range of movement. Initial X-rays of the knee showed soft tissue swelling only but in subsequent films there was an increasing amount of air in the joint and surrounding soft tissues with scalloping of the femoral condyles. Joint aspiration produced only 5 ml of sterile, blood-stained fluid.

Over the next two weeks the knee became more swollen with dusky discolouration anteriorly, that developed into a large black, necrotic area (figure 1).

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Figure 1 Left knee of patient

Questions

- 1 What diagnostic tests should be performed?
- 2 How should this condition be treated?

Answers

QUESTION 1

The blood count showed a persistent neutropenia but was otherwise unremarkable. The initial tissue biopsy was negative but microbiological swabs taken from the knee grew *Aspergillus fumigatus*. The diagnosis was of cutaneous infection with *A. fumigatus*. Histological examination of tissue obtained *post mortem* showed ulcerated, congested skin infiltrated with extensive branching fungal hyphae and plugs in dermal blood vessels, confirming the diagnosis (figure 2).

QUESTION 2

Antimicrobial therapy was started with AmBisome 3 mg/kg daily and miconazole cream topically. *A. fumigatus* infections are not confined by tissue planes and can be dramatically haemorrhagic so early surgical excision should be considered. In this case the patient developed pneumonia, hepatic and renal failure and died three weeks after developing this cutaneous aspergillosis.

Discussion

A. fumigatus is a commonly isolated respiratory pathogen in patients with leukaemia, neutropenia or on immunosuppressive therapy.¹ In the presence of decreased cellular immunity, the focal respiratory tract infection can become invasive, leading to disseminated disease af-

Figure 2 Skin infiltrated with fungal hyphae and plugs

Microorganisms that form gas in soft tissues

- *Clostridium perfringens*, *septicum* and *novyi*
- *Cl. histolyticum*, *fallax* and *bifermentans* may have a synergistic role in gas gangrene
- *Aspergillus fumigatus*

Box 1

Diagnosis and treatment of cutaneous aspergillosis

- tissue biopsy of the edge of the lesion for histological and microbiological examination
- wound swabs less reliable
- high-dose intravenous amphotericin (AmBisome) and topical antifungals
- prompt surgical excision is mainstay of treatment

Box 2

The common organisms that cause septic arthritis in immunocompetent patients also affect the immunocompromised. In addition the following organisms have been described:

- *Salmonella enteritidis*
- *Haemophilus influenzae* type B
- meningococcus
- *Neisseria gonorrhoea*
- *Mycobacterium tuberculosis*
- atypical mycobacteria
- *Candida albicans*
- coccidioidomycosis
- cryptococcus
- blastomycosis

Box 3

fecting the brain, liver or skin. In the musculoskeletal system it has been implicated in septic arthritis, osteomyelitis and bursitis.^{2,3} In this case the primary pathology was a localised soft tissue infection around the knee with a reactive effusion in the joint. Radiographic evidence of intralesional air is a diagnostic feature in cerebral or pulmonary aspergillosis and was seen in this case (box 1).

Cultures of sputum of tissue samples are often negative, or may produce misleading results due to contamination. An adequate soft tissue biopsy should be taken in atypical cases. In this case histological examination of *post-mortem* tissue was diagnostic (box 2).

Although the differential diagnosis of a hot, swollen joint in this group of patients is already long (box 3), this case demonstrates that an apparent monoarthritis due to infection of the surrounding soft tissues with joint pain and a reactive effusion should be considered.

Final diagnosis

Cutaneous aspergillosis of the knee

Keywords: aspergillosis

1 Bodey GP, Vartavarian S. Aspergillosis. *Eur J Clin Microbiol Infect Dis* 1989; 8: 413–37.
2 Horsburgh CR, Cannady PB, Kirkpatrick CH. Treatment of fungal infections in the bones and joints with Ketoconazole. *J Infect Dis* 1983; 147: 1064–9.

3 Ornvold K, Paepke J. *Aspergillus terreus* as a cause of olecranon bursitis. *Eur J Clin Am Pathol* 1992; 97: 114–6.