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Invasive candidiasis of the tonsil

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Abstract
A patient with unilateral tonsillar enlargement secondary to locally invasive candidal infection is presented. This was not associated with any history of immunosuppression or prolonged use of broad-spectrum antibiotics. Invasive candidal infection of the tonsil has not previously been reported.

Key words: Tonsil; Candidiasis

Case history

A 63-year-old man presented to the casualty department of Birmingham Heartlands Hospital with a 10-week history of right-sided sore throat and tonsillar enlargement which had worsened over the previous week. His general practitioner had prescribed a five-day course of penicillin and metronidazole in the previous week. He was systemically well and had no significant past medical history. Furthermore, he was a non-smoker and did not drink alcohol excessively. On examination, he had no trismus. The right tonsil was markedly enlarged with a bluish appearance and an irregular, craggy surface. The left tonsil appeared to be normal as was the rest of the examination of the upper respiratory tract and neck. In view of the prolonged history and persistent asymmetry of the tonsils, the patient was admitted for examination under anaesthetic and right tonsillectomy. Histological examination demonstrated invasion of the tonsil by yeast cells and hyphae. Culture of the tonsillar tissue yielded a moderately heavy growth of *Candida albicans*, confirmed by the Mycology Reference Laboratory (Myrtle Road, Kingsdown, Bristol) as being susceptible to amphotericin B, fluconazole, itraconazole and 5-flucytosine. No bacterial or viral pathogens were isolated. Retrospective questioning revealed no symptoms of immunosuppression and no significant past medical or social history. Haematological, immunological and biochemical profiles were normal and a human immunodeficiency virus (HIV) test with the patient's consent was also negative. He was treated with a 14-day course of oral fluconazole and review at four weeks showed complete resolution of his symptoms and healing of the tonsillar bed.

Pathology

The right tonsil was submitted for histology in two pieces, measuring 1.5 cm and 4.5 cm maximum dimensions. Routine haematoxylin and eosin stained paraffin sections confirmed reactive lymphoid tonsillar tissue with several foci of surface ulceration. Enmeshed within the superficial fibrino-purulent ulcer slough were frequent, lightly basophilic non-dematiaceous hyphae each measuring approximately 3–5 μm in diameter. Deeper within the subjacent connective tissue were less frequent blastopores, hyphae, scattered pseudohyphae and isolated germinating blastospores (Figure 1). There was an associated mixed inflammatory cell infiltrate of modest intensity and patchy distribution comprising mostly neutrophils and lymphocytes. There was minimal fibrosis, no granuloma or abscess formation, no angioinvasion and fungal elements did not extend to the level of the lymphoid tissue. Staining of replicate sections with PAS after diastase pre-digestion and by Grocott's silver impregnation method highlighted the distribution and morphology of these organisms (Figure 2), being fully consistent with Candida species. Occasional colonies of Actinomyces-like organisms were present, confined to the lumina of the tonsillar crypts and considered to be part of the normal commensal flora. There was no evidence of neoplasia.

Discussion

Candidiasis (candidosis) is one of the commonest mycotic diseases of man, with a global distribution. The endogenous yeast *Candida albicans* is the most important cause of both superficial and deep forms of candidiasis. *Candida albicans* is a Gram positively staining yeast which is found as a normal human commensal of skin and mucous membranes, including the entire gastrointestinal tract (Rippon, 1982). Clinical candidal infections are usually superficial and endogenous in origin, resulting from the infection of damaged or macerated skin; or overgrowth due to disturbance of the normal microflora caused by antimicrobial agents (Zalzal and Cotton, 1993).

Antibiotics suppress the normal bacterial flora, allowing *Candida* to proliferate. This is a particular problem with broad-spectrum agents which are active against a wide range of bacteria and which are used frequently in the 'blind' treatment of many infections, from simple urinary tract infections to major sepsis. Some antibiotics have also been shown to impair the immune response by decreasing neutrophil activity (Forsgren *et al.*, 1974; Ferrari *et al.*, 1980). Immune compromise, whether naturally-occurring or iatrogenic, also predisposes to candidal infection. Diabetes mellitus, haematological malignancy and autoimmune deficiency syndrome (AIDS) would normally be

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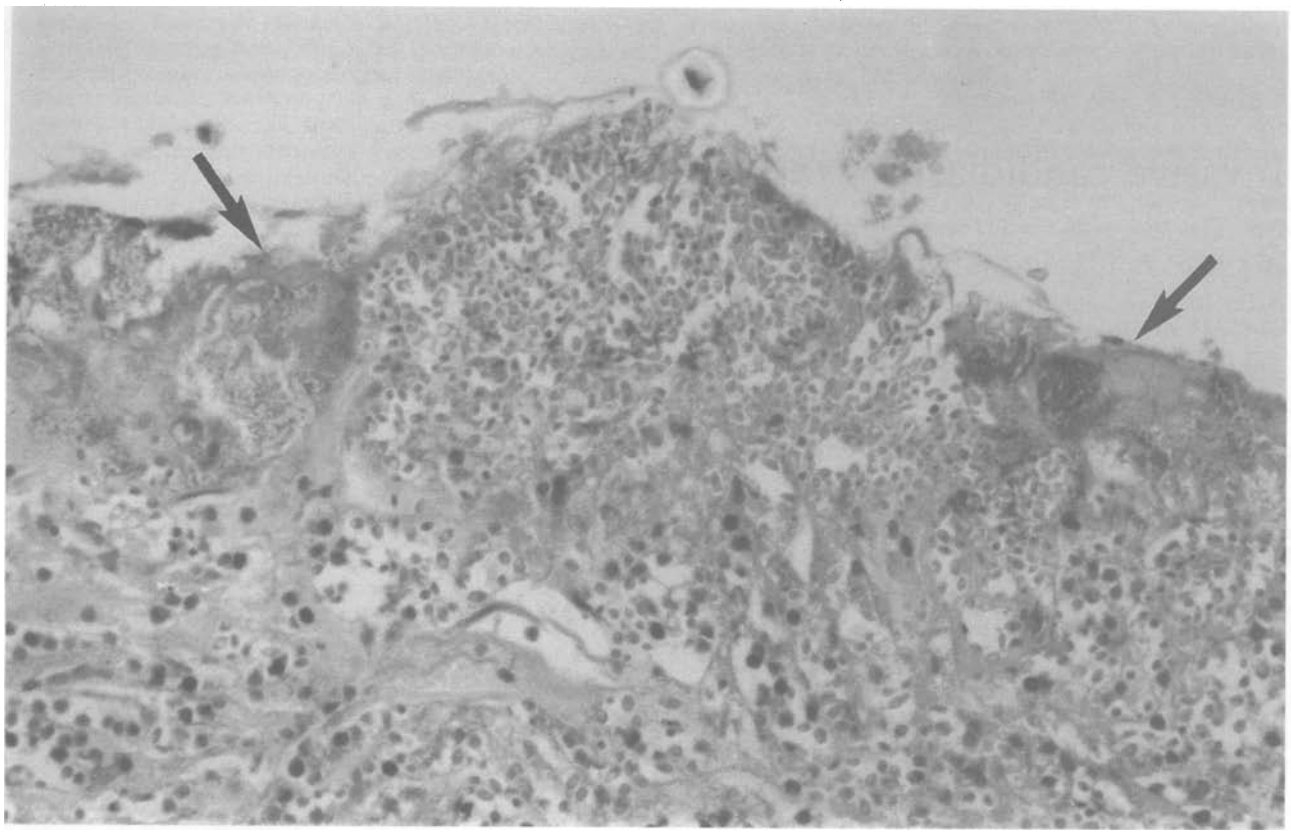

FIG. 1
Lightly staining surface candidal blastospores extending into underlying connective tissue. Superficial bacterial colonies flank these on either side (arrows). (H & E × 440).

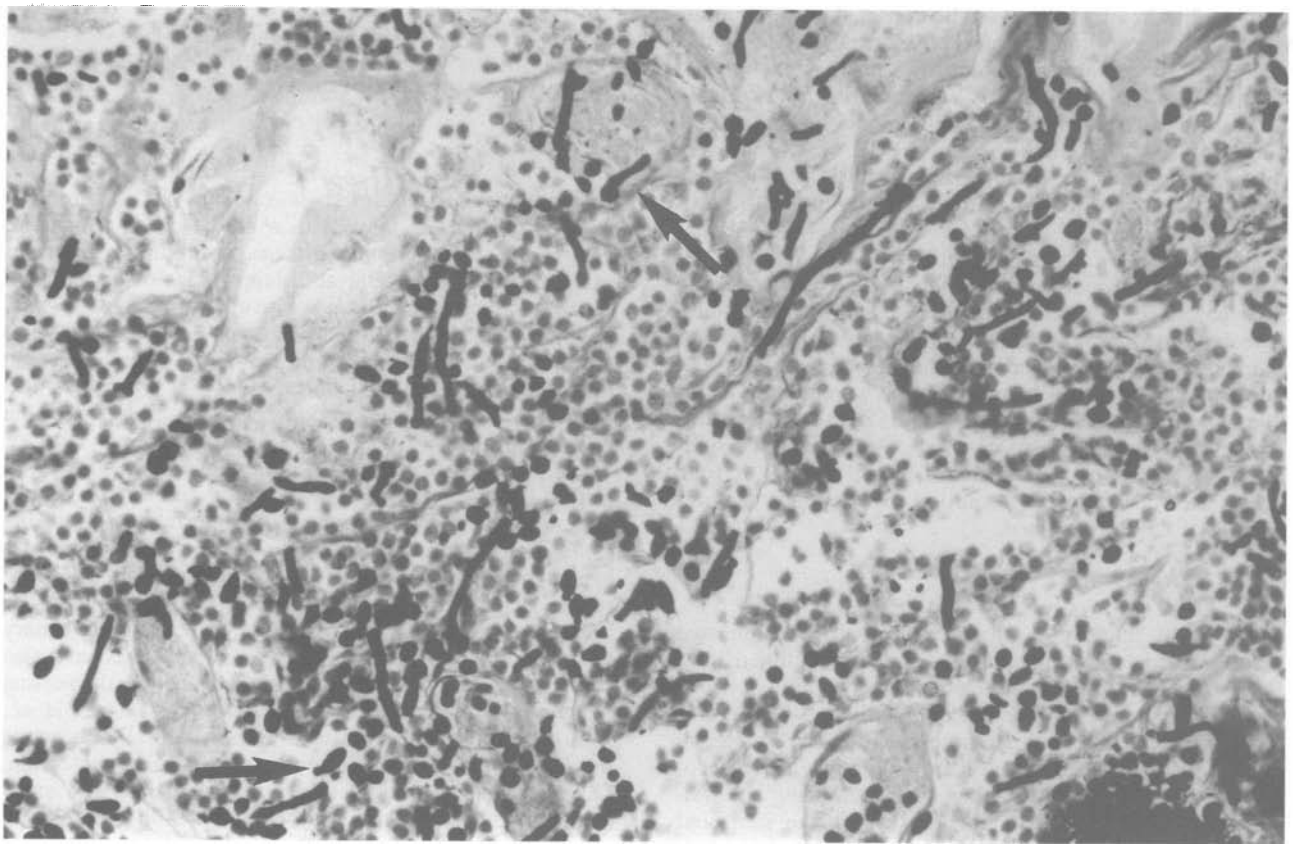

FIG. 2
Ovoid candidal blastospores invading deeper tonsillar stroma. Infrequent septa (arrowhead) and germ tubes (arrow) are noted and there is sparse accompanying inflammatory cell infiltrate. (Grocott; × 440).

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included in the former category while the latter would include patients receiving chemotherapy, radiotherapy and steroids (inhaled steroids particularly predisposing to oral candidiasis).

The clinical manifestations of candidiasis are divided conventionally into three broad categories; namely, mucocutaneous, cutaneous and systemic (Chandler *et al.*, 1980). Mucocutaneous candidiasis most commonly involves the oral and vaginal mucosa. Hormonal and immunological disturbances are predisposing factors for infection, as are broad spectrum antibiotics, immunosuppressive drugs and steroids. In the ordinary, superficial form of mucocutaneous infection, masses of Gram positive, branching, septate hyphae, pseudohyphae (mycelia-like filaments formed by successive budding with failure of separation) and ovoid blastospores (budding yeast cells) are present on the surface and within the epithelium. The organisms may breach basement membranes and penetrate deeper structures; but this usually occurs in individuals with malignant disease and/or immunosuppression (Domer and Lehrer, 1993). Tissue invasion is associated with the formation of microabscesses containing both yeast and hyphal forms with a largely polymorphonuclear cellular reaction (Odds, 1988).

Patients with unilateral tonsillar enlargement are investigated urgently to exclude neoplastic disease. Tonsillar hyperplasia secondary to invasive candidal infection has not previously been reported and it was particularly unusual to find such invasiveness in an immunocompetent host. Although oropharyngeal candidiasis is treated routinely with simple, oral antifungal agents such as nystatin; more potent agents, such as amphotericin or fluconazole are required in the treatment of invasive or systemic disease. In this case, with an immunocompetent patient whose lesion had been largely removed by surgery, fluconazole was chosen, as it achieves good tissue levels after oral administration and is less toxic than systemic amphotericin (Hay, 1990).

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