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Fungal infection of the maxillary sinus

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Fungal diseases in the nasal cavity and paranasal sinuses are rare and include phycomycosis, histoplasmosis, coccidiomycosis, candidiasis and aspergillosis (Romett et al., 1982). Aspergillosis is the most common fungal infection of the paranasal sinuses (Miglets et al., 1978), and the maxillary sinus is most frequently affected (Romett et al., 1982).

Less than 120 cases of aspergillosis in the maxillary sinus have been reported in the world literature since the first documented description by Zarniko in 1891 (Petersen et al., 1982). The number of reported cases of aspergillosis in the nasal cavity and paranasal sinuses has been increasing. Thus, in 1972 only 37 cases were reported, of which a single author had described 17 (Romett et al., 1982). This paper presents another case which illustrates the importance of the predisposing factors and the diagnostic difficulties.

CASE STORY

A previously healthy 58-year-old man was admitted with purulent left-sided nasal secretion of four months duration, having no febrilia or facial swelling. Before ad-

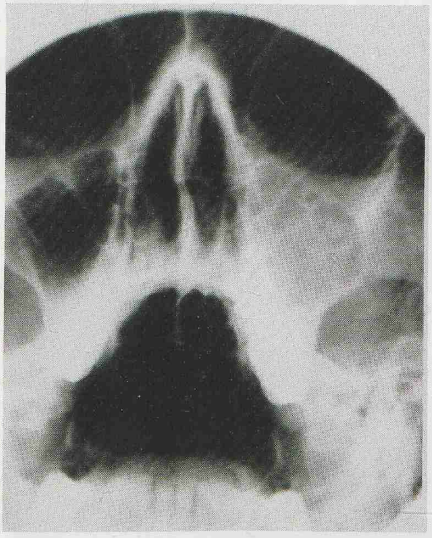

Figure 1.
X-ray picture of the facial bones showing massive opafication of the left maxillary sinus.

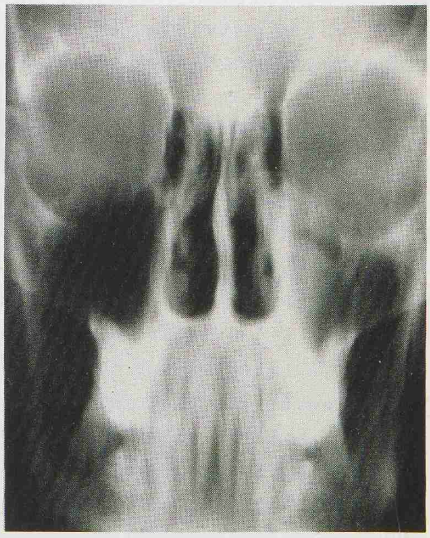

Figure 2.
Tomographic section showing a tumour-like mass in the lower two thirds of the left maxillary sinus.

mission the patient had been treated with tetracyclin and metronidazol. Irrigation of the maxillary sinus had been performed several times without effect. Radiographic examination showed massive opacification of the left maxillary sinus without any suspicion of tumour or foreign body (Figure 1), but tomographic examination revealed a small amount of air in the upper part of the sinus (Figure 2). Dental examination disclosed no possibility of odontogenic etiology. A Caldwell-Luc procedure was carried out, and the left maxillary sinus was seen filled with a gritty, greenish, rubbery material. The mucosa was thickened with intact bone everywhere, and the mass was removed. Some secretion characterized the postoperative course, however, it disappeared in 10 days through irrigation of the maxillary sinus.

Microscopy of the mucosa showed respiratory epithelium with several round cell infiltration, mainly with plasmacells and lymphocytes. A few neutrophile, but no eosinophile granulocytes were seen. Between the mucosa fragments, masses of single and branching aspergillus-hyphae were found (Figure 3), and microscopy of the rubbery material showed a typical mycetoma, consisting of closely intertwined aspergillus-hyphae with central necrosis (aspergilloma). Culture of secretion from the maxillary sinus revealed no growth of TB, moderate growth of E. coli, sensitive to penicillin, and growth of A. fumigatus.

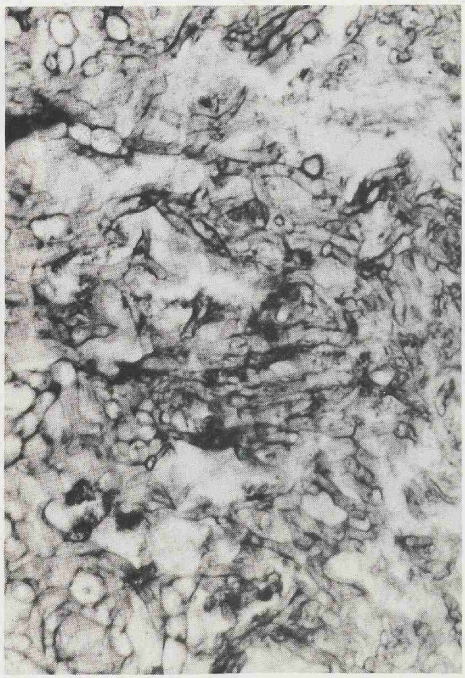

Figure 3.
Masses of single and branching aspergillus-hyphae from the aspergillus mycetoma. (PAS-staining, ×2500).

DISCUSSION

Aspergilli are found everywhere in nature and are pathogenic to birds, animals and man (Bahadur et al., 1983). The fungus thrives anaerobically, and as it often contaminates the upper respiratory tract, it may become pathogenic when a sinus becomes anaerobic through bacterial infection (Romett et al., 1982).

Aspergillosis in the paranasal sinuses is most frequently seen in agricultural areas with a hot, humid climate as in India and North Carolina (Bahadur et al., 1983; Petersen et al., 1982) or in the Sudan where the climate is dry, dusty and windy (Milosev et al., 1969).

The poor immune defence from malnutrition, chronic diseases, malignant tumours, treatment with steroids, cytostatics and wide-spectred antibiotics, predisposes to aspergillosis in the paranasal sinuses (Romett et al., 1983; Bahadur et al., 1983).

Aspergillosis in the maxillary sinus is classified as a non-invasive or invasive infection. In the non-invasive infection, the clinical manifestations are undistinguishable from those found in chronic bacterial sinusitis. But in the invasive infection, bony erosion and involvement of the orbit, the cheek and sometimes the cranial fossa are seen. In the immune deficient patient the course may be fulminant with disseminated aspergillosis (Axelsson et al., 1978; Petersen et al., 1982; Romett et al., 1982).

In healthy persons there may be systemic or local factors, predisposing to fungal infection of the sinuses. Thus, many patients with aspergillosis in the paranasal sinuses have been treated with wide-spectred antibiotics (Axelsson et al., 1978), which suppress the bacterial flora, thereby favouring the fungal proliferation (Romett et al., 1982).

Recurring bacterial sinusitis, tooth extractions, traumas and surgery may compromise the drainage from the paranasal sinuses, thus locally predisposing to fungal infections (Axelsson et al., 1978).

The frequency of aspergillosis in the paranasal sinuses, which has increased in recent years, may probably be related to the increasing use of antibiotics, steroids and cytostatics (Babajews, 1982), but the explanation may also be that the disease is now more widely recognized (Romett et al., 1982).

Most cases are cured by surgical drainage, resulting in aeration of the involved sinus. In the invasive and fulminant infections the treatment may be supplemented with amphotericin B (Romett et al., 1982; Bahadur el al., 1983).

Patients with maxillary sinusitis, not responding to antibiotical treatment and irrigation, ought to have performed a diagnostic resection of the sinus, this being also the treatment of a possible fungal infection. The diagnosis is made by means of routine histopathological examination and culture.

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