Craniocerebral Madurella mycetoma

Cranial involvement in mycetoma is distinctly uncommon and occurs in less than 4% of cases [1].

According to previous reports, the causative organisms of cranial mycetoma are predominantly actinomycetes: Streptomyces somaliensis, Actinomadura madurae, and A. pelleterii.

Madurella mycetomatis, the major etiologic agent of human eumycetoma, has rarely been implicated, with only 9 cases reported in the English literature [2].

Clinical Course

Early in the clinical course of cranial eumycetoma, the patients typically present with painless scalp swellings discharging black grains, or ear and nasal discharge.

Neurological complications of cranial eumycetoma infection include epilepsy, cranial nerve palsies, brain abscess, and meningitis.2 The incidence of these complications in cranial actinomycetoma is variable, ranging from 0% to 62%.

Interestingly, in the 9 cranial Madurella mycetoma cases reviewed, 7 patients (78%) had clinical evidence of neurological complications.

Diagnosis

The diagnosis of cranial mycetoma is often based on mycological studies, cytology, histological examination, and, more recently, molecular techniques. Scans using CT and MRI remain the gold standard for assessing the extent and pattern of bone involvement and intracranial extension and planning management; CT is superior to MRI in detection of early bone changes. A general consensus holds that cranial mycetoma infection almost always involves more than one bone and produces mainly osteosclerotic lesions, with loss of the trabecular pattern and dense bone formation.

In contrast, 4 of the 5 cases of cranial Madurella mycetoma for which this information is available were localized to one bone. Moreover, 63% of the patients (5 of 8) with cranial Madurella mycetoma showed predominantly osteolytic changes, such as cortical erosion, cavity formation, or complete bone lysis, a pattern similar to that described in the context of Madurella mycetoma of other sites.

It seems, therefore, that the bone tissue response to M. mycetomatis infection is generally the same regardless of the site of involvement [3].

Treatment

Treatment of cranial eumycetoma is challenging, and early surgical excision with wide margins offers the only chance of cure. Nevertheless, this is often precluded by the advanced stage of the disease at presentation and the deep anatomical location and multiplicity of the lesions. In a review, 2 of the cases were considered inoperable, leaving an overall cure rate of 50%. We recommend that a meticulous operative technique be used during exposure and resection of cerebral lesions to prevent spillage and seeding of grains into the adjacent operative field. This should be supported with

appropriate antibiotic prophylaxis and intraoperative antibiotic wash, given the high incidence of concomitant bacterial infection, particularly in cases of eumycetoma.

Additionally, perioperative chemotherapy with azole-class antifungals is essential, as it helps to stabilize the lesion prior to surgery and reduce the risk of recurrence [4].

Case reports

Beeram et al. describe a case of maduromycetoma involving the left parietal cortex, bone, and subcutaneous tissue in a young male farm laborer who presented with left parietal scalp swelling that had progressed into a relentlessly discharging sinus. Computed tomography (CT) scanning of his brain revealed osteomyelitis of the parietal bone with an underlying homogeneously enhancing tumor. Intraoperatively, the mass was revealed to be a black lesion involving the bone, dura mater, and underlying cerebral cortex. It was friable and separated from the surrounding brain by a thick gliotic scar. Gross-total excision was performed, and the patient was placed on a 6-week regimen of itraconazole [5]

Goes et al. report a case of maduromycetoma in a 17-year-old girl from a rural background in the state of Rajasthan, India, with involvement of the right parietal cortex, overlying bone, and subcutaneous tissue. The mass was totally excised, along with the involved dura mater, bone, and scalp. She was given antifungal drugs in the postoperative period. The patient responded very well to the treatment, and there were no signs of recurrence at the 6-month follow-up visit [6].

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