We have treated seven patients with cryptococcal spondylitis. Five presented with a neurological deficit and one was HIV-positive. Amphotericin-B and 5-flucytosine were used in five patients and ketoconazole was given orally in the remaining two. Three patients made a complete neurological recovery. Since these lesions mimic spinal tuberculosis, which is commonly seen in our environment, we draw attention to the importance of obtaining a tissue diagnosis.

Isolated bony involvement with Cryptococcus neoformans is rare. The commonest clinical presentation of this organism is meningitis, but involvement of bone has been reported in 10% of cases as part of a systemic infection. The radiological features of osseous cryptococcosis are non-specific and the findings at operation are similar to those of tuberculosis. If no associated factor is found, isolated skeletal involvement in immunocompetent patients can be managed by curettage or excision without the use of potentially toxic antifungal agents.

Materials and Methods

Between 1987 and 1994, we treated seven patients with cryptococcal spondylitis (Table I). The mean duration of paralysis was five weeks (3 to 10). In four patients, predisposing factors were identified as being diabetes in one (case 2), a past history of pulmonary tuberculosis in two (cases 1 and 4), and HIV in one (case 7). This last patient presented with obstruction of the upper airway. Anaemia was noted in five patients (Hb <100 g%) and the ESR was raised (mean 53 mm/hr; range 38 to 78) in all patients. One (case 7) showed a CD4/CD8 reversal with a decreased CD4 count of 177 µl (normal range, 550 to 1995). The lymphocyte count was decreased to 1.2 g/l (normal range, 1.5 to 4.0). The radiological appearances varied from a cystic lesion to involvement of single and multiple bodies (Figs 1 to 3).

Five patients, with neurological deficit, had an anterior decompression and in one (case 2) an open biopsy and curettage were carried out. A palliative incision and drainage were undertaken in another (case 7) to relieve the obstruction of the upper airway. The findings at surgery in all patients were strikingly similar to those of tuberculosis, but the granulation tissue was slimy. Microbiological cultures and histology showed Cryptococcus neoformans to be present in all patients. Acid-fast bacilli were also cultured in one (case 1). In four patients (cases 2 to 5) the cryptococcal antigens were negative in blood and CSF. The earlier patients (cases 1 to 5) were treated with amphotericin B (0.25 mg/kg) and 5-flucytosine (50 mg/kg) for a period varying from two to six weeks, with doses being increased to a maximum of 0.45 mg/kg and 100 mg/kg, respectively. The blood count, liver function, blood urea and electrolytes were monitored regularly to evaluate the effect of medication. Because of toxic side-effects from amphotericin B, ketoconazole (40 mg/day) was given orally to two patients (cases 6 and 7) for four weeks.

Results

The mean follow-up was 27 months (6 to 129). One patient (case 1) died from cryptococcal meningitis two weeks after operation. Complete neurological recovery was observed in three patients (cases 4 to 6), and partial recovery in one (case 3). Bony fusion occurred within two years in the five patients who had spinal decompression. Three patients, who received amphotericin B and 5-flucytosine, developed alopecia, vomiting and leucopenia.

Discussion

Cryptococcus neoformans, a yeast-like fungus, is a common cause of meningitis and infects 7% to 10% of patients with AIDS. It occurs widely in nature and is found in large numbers in pigeon roosts. As well as AIDS, the infection may be seen in association with leukaemia, lymphoma, Hodgkin’s disease, sarcoidosis, tuberculosis and diabetes as
Table I. Clinical details of the seven patients with cryptococcal osteomyelitis of the spine

<table>
<thead>
<tr>
<th>Case</th>
<th>Gender</th>
<th>Age (yr)</th>
<th>Level of lesion</th>
<th>Preoperative neurological status</th>
<th>Postoperative neurological status</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>6</td>
<td>T4/5</td>
<td>A</td>
<td>Died</td>
<td>Anterior decompression Rib graft</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>43</td>
<td>L3</td>
<td>E</td>
<td>E</td>
<td>Needle biopsy/open biopsy and curettage Rib graft</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>31</td>
<td>T4/5</td>
<td>B</td>
<td>C</td>
<td>Anterior decompression Iliac graft</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>27</td>
<td>T8/9</td>
<td>C</td>
<td>E</td>
<td>Anterior decompression Rib graft</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>38</td>
<td>T11/12</td>
<td>B</td>
<td>E</td>
<td>Anterior decompression Iliac graft</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>35</td>
<td>T8</td>
<td>C</td>
<td>E</td>
<td>Anterior decompression Iliac graft</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>23</td>
<td>C4/5</td>
<td>E</td>
<td>E</td>
<td>Incision and drainage</td>
</tr>
</tbody>
</table>

* A, motor and sensory loss; B, sensation spared; C, useless motor function; D, useful motor function; E, normal

Case 2. Figure 1a – CT of a ‘cystic’ lesion of the L3 vertebra. Bone loss is the only feature. Figure 1b – Ten years later a plain radiograph showed consolidation of a rib graft which had been inserted to fill the defect.

Case 6. Plain radiographs showing a) the collapse of the T8 vertebra without involvement of the intervertebral disc and b) six years after surgery with a rib graft; fusion has occurred without further collapse.
well as in patients on steroid medication. Less commonly, healthy individuals are affected. In immunodeficient patients, the pulmonary infection may disseminate systematically to involve the CNS and other organs.

Osseous involvement is usually a manifestation of disseminated cryptococcosis, appearing in 5% to 10% of cases. The radiological features of skeletal involvement are non-specific and there is a spectrum of appearances. A lytic lesion within a vertebral body can resemble the cystic form of tuberculosis, with discrete margins and surrounding sclerosis. The infection may appear as a permeative lesion involving a single vertebral body with collapse. In the latter stage of the infection, two contiguous bodies may be involved with a paravertebral soft-tissue swelling mimicking spinal tuberculosis and, less commonly, as in tuberculosis, the posterior elements may be affected. Because of the similarities to tuberculosis we advocate that tissue diagnosis should be carried out, since the chemotherapeutic agents are not the same for tuberculosis and cryptococcosis.

Skeletal lesions in cryptococcosis have responded variably to treatment and have even healed spontaneously. Localised accessible foci in immunocompetent patients have been successfully treated by operation without the use of antifungal agents.

In the immunocompromised patient it is important to consider fungal infection in the differential diagnosis of spondylitis.

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References