Rhodococcus equi brain abscess in a patient without HIV
M Kamboj, A Kalra, V Kak

CASE REPORT

Rhodococcus equi, a Gram positive organism, is a cause of infections in immunocompromised individuals. In humans, it mainly causes disease in those infected with human immunodeficiency virus (HIV), and generally presents as chronic pulmonary infection. It may also cause intracranial infections, which manifest as brain abscesses. This report describes a case of rhodococcus brain and pulmonary infection in a patient who did not have HIV or another disorder of cell mediated immunity. He was treated with intravenous imipenem, vancomycin, and rifampin for eight weeks and recovered from the infection.

The aerobic Gram positive coccobacillus, Rhodococcus equi, is a well known cause of disease in animals. Human disease predominantly occurs in individuals with human immunodeficiency virus (HIV), or other immunocompromised states. There have been rare reports of brain abscesses caused by R equi in patients without HIV who have been immunocompromised as a result of chemotherapy.1–5 We report a case of Rhodococcus equi brain and lung abscesses in an HIV negative individual.

CASE REPORT

A 43 year old man with a history of chronic hepatitis C and alcohol abuse was admitted to the hospital with a five day history of haemoptysis and shortness of breath. He had no recent history of hospitalisation, fever with rigor, tuberculosis, or HIV exposure. He also denied contact with sick individuals, contact with animals, or recent travel. He had a history of heavy alcohol intake and a splenectomy after a motor vehicle trauma in the remote past.

On initial examination he had a fever of 100°F, although his other vital signs were normal. His physical examination revealed mild bronchial breath sounds on the left upper lung field. The initial laboratory findings revealed his total white blood cell count to be 32.4 ×10⁹/litre. A hepatic screen revealed raised liver enzymes (aspartate aminotransferase, 155 U/litre; alanine aminotransferase, 110 U/litre; and alkaline phosphatase, 134 U/litre). His chest x-ray was suggestive of left upper lung field opacification. An empirical antibiotic regimen including ceftriaxone 2 g daily, levofloxacin 500 mg daily, and metronidazole 500 mg every eight hours was started and blood cultures, urine analysis, and sputum studies including acid fast bacillus stains and cultures were obtained; these were initially negative. A serological HIV test obtained after informed consent was negative. Subsequent radiological investigations (computer assisted tomography scan of lungs) revealed a cavity in the left upper lobe of the lung (fig 1). A bronchoscopic examination was performed and routine cultures obtained during the test were negative for mycobacterial, fungal, and bacterial pathogens. The patient subsequently became delirious and a magnetic resonance imaging scan of the brain was obtained, which showed four ring enhancing lesions in the cerebral cortex (fig 2). A neurosurgical consultation was obtained for a possible brain biopsy and the empirical antibiotic regimen was discontinued before the brain biopsy because of worsening liver function. A neurosurgical aspirate of one of the lesions in the parietal cortex revealed creamy pus on gross examination, with the Gram stain showing more than 100 white blood cells in each high power field, but no organisms. The routine cultures of the aspirate were also negative, as was an HIV test. A set of blood cultures was repeated because the patient developed fever and still had a persistently raised total leucocyte count. The blood samples were cultured aerobically and anaerobically by means of the BACTEC method, and there was a single positive blood culture, which was Gram stained and subcultured on blood agar. The blood agar plate showed large mucoid colonies with characteristic salmon pink pigmentation. The API Cornye system (Biomerieux, Marcy-l’Etoile, France) was used to characterise the Gram positive, coccoid, catalase positive organism, which was found to be R equi. The susceptibility of the organism to several antibiotics was checked using the E-test (AB Biodisk, Solna, Sweden), and the results are shown in table 1. The patient was treated with intravenous rifampin, imipenem, and vancomycin for eight weeks. The patient improved on the antibiotics: his chest x ray showed resolution of the cavitary lesion and there was also a decrease in the size of the ring enhancing lesions on follow up MRI performed three months later.

Figure 1  Computer assisted tomography scan of the lung showing a cavity in the left upper lobe of the lung.
The minimum inhibitory concentration (MIC) of the isolate to the antibiotics tested

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>MIC (µg/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imipenem</td>
<td>0.064</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>0.032</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>0.38</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>0.38</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>1.5</td>
</tr>
<tr>
<td>Trimethoprim-sulfamethoxazole</td>
<td>0.047</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>0.125</td>
</tr>
</tbody>
</table>

"Both the duration and the route of treatment should be adjusted based on the clinical and radiological response to treatment"
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