

## Acute actinomycotic empyema

R N HARRISON AND D J B THOMAS

From the Department of Medicine, Southampton General Hospital, Southampton, UK

The presentation of thoracic actinomycosis may not conform to the classical description of chronic infection with suppuration, granulomas, and sinus formation (Slade *et al*, 1973). We describe an acute empyema which yielded a heavy growth of *Actinomyces israeli* with two other anaerobes and which resolved rapidly with medical treatment.

### Case report

A 61-year-old male alcoholic with maturity-onset diabetes presented with a two-week history of chest pain, fever, and haemoptysis unresponsive to oral cotrimoxazole. He was a heavy cigarette smoker, with no previous respiratory symptoms and a normal chest radiograph two years previously.

His temperature was 39°C; he was dehydrated and confused and had a non-productive cough and signs of a left pleural effusion. Abnormal investigation results included a normochromic anaemia, Hb 9.3 g/dl, a white cell count of  $17.8 \times 10^9/l$  (84% polymorphs), and ESR of 109 mm in the first hour. Chest radiograph (see figure) showed a left posterior pleural effusion with several air-fluid levels and a separate left apical mass, thought to be a loculated effusion.

Thoracocentesis yielded 500 ml of foul smelling yellow pus which, on staining, showed many Gram-positive filamentous branching rods, later identified on

anaerobic culture as *A israeli*. *Bacteroides* and a microaerophillic *streptococcus* were also grown from the same anaerobic culture.

Parenteral ampicillin, 2 g daily, and oral metronidazole, 1200 mg daily, were started immediately. His diabetes was controlled and fluid balance corrected but he remained severely ill. Five days after admission benzylpenicillin, to which all three organisms were sensitive, was started in a dose of 6 megaunits daily. Over the next 48 hours he continued to show a swinging pyrexia, and his general condition deteriorated. Seven days after admission a further 350 ml of pus were aspirated, 10 megaunits of benzylpenicillin were instilled into the pleural space, and the parenteral dose was increased to 24 megaunits daily.

Within 24 hours his condition improved and his temperature returned to normal; a third and fourth aspiration over the subsequent four days removed a further 350 ml of pus, and on both occasions one megaunit of intrapleural penicillin was given. Parenteral penicillin was continued at the higher dose for ten days and followed by two weeks of oral penicillin, 4 g daily, with probenecid. Metronidazole was discontinued after a total of 14 days.

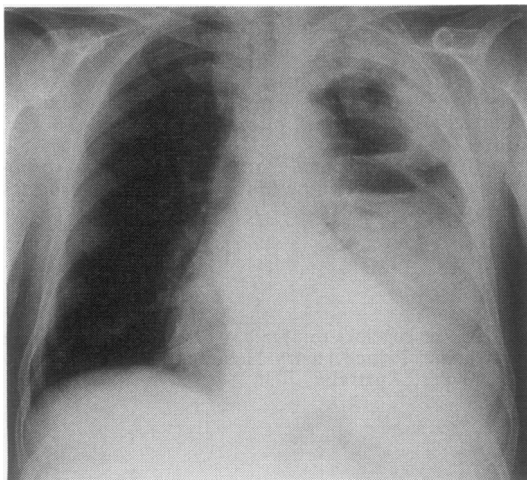
Six weeks after admission his radiograph had returned to normal, there were no abnormal physical signs, and he was asymptomatic.

### Discussion

As a result of his alcoholism, this patient had attended hospital several times with blackouts and minor head injuries in the weeks before presentation, so aspiration of oropharyngeal secretions probably caused his illness. *A israeli* is a frequent commensal in the mouth, and this route has previously been implicated in acute actinomycotic infections, particularly in patients already debilitated by coexisting disease (Frank and Strickland, 1974). The mixed growth is typical of an aspiration pneumonia and subsequent empyema.

The identification of *A israeli* in empyema fluid should not be a problem if anaerobic cultures are obtained as a routine. Problems are more likely to arise in the forms of thoracic actinomycosis in which there are difficulties in obtaining suitable bacteriological specimens; multiple abscess and sinus formation are the result of delayed diagnosis and treatment.

Penicillin remains the drug of choice for actinomycotic infection, but treatment schedules vary. A recommendation based on a similar case to ours was to continue antibiotics for 12 to 18 months (Bonfils-Roberts and Comer, 1971), and this is in keeping with



Chest radiograph on admission. Left sided empyema and separate loculated collection at left apex.

advice for the treatment of all forms of intrathoracic actinomycosis (Utz *et al*, 1971). There has, however, been a report of an empyema that resolved with 3 megaunits of systemic penicillin and 3·5 megaunits of intrapleural penicillin given over a period of only two weeks (Bates and Cruickshank, 1957).

Our patient shows that an acute primary actinomycotic empyema can be cured by three to four weeks systemic penicillin in large doses when combined with needle aspiration and intrapleural antibiotics. Rapid resolution occurred only when benzylpenicillin was increased to 24 megaunits daily and intrapleural antibiotics were given.

We thank Dr P G Todd for allowing us to report this case.

#### References

Bates, M, and Cruickshank, G (1957). Thoracic actinomycosis. *Thorax*, **12**, 99–124.

Bonfils-Roberts, E A, and Comer, J V (1971). Actinomycosis empyema. *New York State Journal of Medicine*, **71**, 364–365.

Frank, P, and Strickland, B (1974). Pulmonary actinomycosis. *British Journal of Radiology*, **47**, 373–378.

Slade, P R, Slesser, B V, and Southgate, J (1973). Thoracic actinomycosis. *Thorax*, **28**, 73–85.

Utz, J P, Kravetz, H M, Einstein, H E, Campbell, G D, and Buechner, H A (1971). Chemotherapeutic agents for the pulmonary mycoses. *Chest*, **60**, 260–262.

Requests for reprints to: Dr R N Harrison, Department of Medicine, Southampton General Hospital, Southampton, Hants.