Spontaneous pneumothorax complicating Legionnaires' disease

A. BALI
M.R.C.P. (U.K.)

A. A. PIERRY
M.R.C.P.I.

A. BERNSTEIN
F.R.C.P.

Department of Thoracic Medicine, Hope and Ladywell Hospitals (University of Manchester School of Medicine), Salford, Lancs.

Summary

Spontaneous pneumothorax is a known but rare complication of pneumonia in adults. A case is described of Legionnaires' disease complicated by spontaneous hydropneumothorax. So far as is known such an association has not been reported previously.

Introduction

Pneumothorax as a complication of pneumonia is more likely to occur with those infections associated with cavitation and abscess formation. Presumably rupture of a pneumatocele or abscess into the pleural space is the mechanism of production of the pneumothorax. Organisms most commonly associated with this condition include *Mycobacterium tuberculosis* (Meyerson, 1948) and *Staphylococcus aureus* (Mills and Bruce, 1965).

Case report

A 39-year-old previously fit British male developed malaise, rigors, dry cough, vomiting and watery diarrhoea on the sixth day of his holiday in southern Portugal. The vomiting and diarrhoea subsided after 3 days but the cough persisted and he began to produce mucopurulent sputum. One week later he returned to England and despite therapy with ampicillin he failed to improve. On the tenth day of his illness he developed right-sided pleuritic chest pain and became acutely dyspnoeic. The dyspnoea increased in severity until he was admitted to hospital on the fourteenth day of his illness.

On initial examination his temperature was 37.6°C, the respiratory rate was 28/min, pulse rate 100/min and the BP 120/80 mmHg. Chest expansion was diminished on the right side with dullness to percussion at the right base and absent breath sounds throughout the right side of the chest. There were no other abnormal findings. Initial chest X-ray showed a right-sided hydropneumothorax (Fig. 1).

Laboratory data

Hb, blood urea and serum electrolytes were

normal; white cell count was $23 \times 10^9/l$, 88 polymorphs; ESR 109 mm/hr; Gram stain sputum showed polymorphs only and no organisms were grown on routine culture; viral serology and mycoplasma fixation test were negative; the diagnosis of Legionnaires' disease was confirmed by indirect fluorescent antibody titres of 1:512 (IgG) and 1:2049 (IgM).

Treatment with erythromycin 1 g/6 hr was started at admission, but his subsequent clinical course was unsatisfactory with persisting pyrexia and failure of pulmonary re-expansion despite continuous intercostal drainage to under water level.

Two weeks after admission a right upper lobectomy and decortication were carried out and

FIG. 1. Initial chest X-ray showing a right-sided hydropneumothorax.

erythromycin was continued for a total of 6 weeks. The postoperative course was uneventful, the pyrexia subsided and the patient was discharged. He has subsequently returned to work. Chest X-ray taken one month later is shown in Fig. 2.

FIG. 2. Chest X-ray of the patient one month after discharge.

Discussion

Tuberculosis was the commonest infection associated with pneumothorax before the advent of anti-tuberculous chemotherapy (Meyerson, 1948). The pneumonia now most frequently associated with pneumothorax is that due to *S. aureus* (Mills and Bruce, 1965). Organisms more rarely involved include *Klebsiella* (Pierce, 1974), *Pseudomonas aeruginosa* and *Histoplasma capsulatum* (Mills and Bruce, 1965).

Legionnaires' disease is being increasingly recognized as a cause of severe pneumonia. Over 500 cases have been reported in England since 1977 (Communicable Diseases Surveillance Centre, Public Health Laboratory Service). Of these patients, about 25% had been abroad, mainly to Spain and the Balearic Islands and a few to Portugal. The remaining infections were acquired within the United Kingdom.

Infection with *Legionella pneumophila* causes a wide spectrum of illness from sub-clinical to severe and fatal disease. The complications include encephalopathy, acute renal failure (Tsai *et al.*, 1979), aplastic anaemia (Hajiroussou and Joshi, 1980), thrombocytopenia (Gasper, Farndon and Davis, 1978) and disseminated intravascular coagulation (Oldenburg *et al.*, 1979). Pulmonary involvement may be absent (Carrington, 1979) but occurs in the majority of cases and is usually in the form of patchy consolidation (Swartz, 1979). Pleural effusions, although not uncommon, are small and not a prominent feature of Legionnaires' disease (Swartz, 1979). According to early reports, cavitation did not occur (Swartz, 1979) but cases with cavitation have now been reported (Lake *et al.*, 1979). So far as the present authors are aware there have been no cases reported with a large pleural effusion or with spontaneous pneumothorax.

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