

Pulmonary Actinomycosis in Children

A. J. Thompson and H. Carty

Department of Radiology, Alder Hey Children's Hospital, Liverpool, England

Abstract. The radiological features of three cases of pulmonary actinomycosis in children are presented. Two of the cases had the classical roentgen features of chronic consolidation with overlying rib periostitis. The third had non specific consolidation but demonstrated extension through the diaphragm. Two of our cases were mentally subnormal children in institutional care. Their pulmonary pathology is almost certainly attributal to poor dental hygiene, a constant problem in this group of children. Hence, although pulmonary actinomycosis is rare in the general populus, we suggest it might be suspected more often in the subnormal group when chronic consolidation is present.

Key words: Pulmonary actinomycosis – Mental subnormality – Rib periostitis

The thorax is involved in only 13–15% of cases of actinomycosis [1, 2, 3, 8, 12] and the incidence is apparently waning [4]. Since most pulmonary actinomycosis is secondary to dental caries and poor dental hygiene [1, 3, 9, 13, 14], its diminishing incidence may be partly due to improved dental care. Two of our cases, however, were mentally sub normal children and had very poor dentition. The radiological features presented by these two cases in particular, were more florid than is usually seen today, according to recent literature [6, 14].

Case Reports

Case 1. This boy aged 15 years, a microcephalic with mental subnormality and epilepsy, had spent all his life in institutional care.

He presented with weight loss, lethargy and a swelling under his right arm and chest wall. On examination, the mass was fluctuant and deep to the subcutaneous tissues. Chest X-ray at this time showed right upper lobe consolidation with wavy periostitis of the overlying ribs (Fig. 1). Incision of the abscess revealed sulphur granules and abundant pus from which actinomycosis was cultured. Treatment with penicillin for 6 weeks effected a clinical cure, the chest radiograph after 2 months showing only residual fibrosis. In retrospect, the patient was noted to have multiple dental caries and severe gingivitis.

Case 2. This girl, aged 11 years, had a cerebral palsy and had been recently transferred for permanent institutional care having a spastic quadriplegia. She presented with a soft fluctuant mass over the right scapular region which was clinically thought to be a haematoma. A chest X-ray showed right upper lobe consolidation (Fig. 2) with periostitis of the 2nd, 3rd, 4th and 5th ribs (Fig. 3).

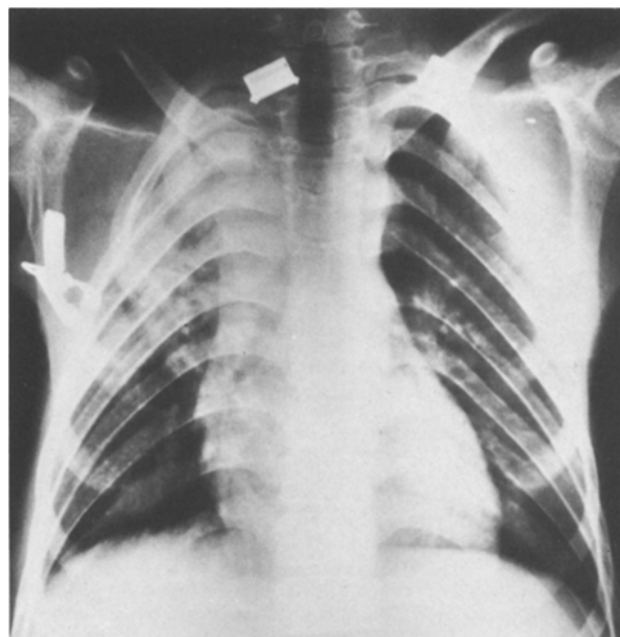


Fig. 1. Right upper lobar consolidation with a wavy periosteal reaction of the overlying ribs, especially 2nd and 3rd ribs

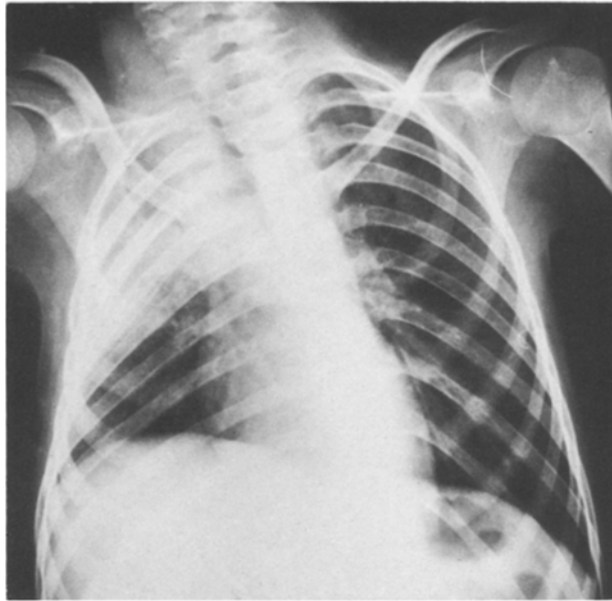


Fig. 2. Right upper lobe consolidation with a periostitis affecting ribs 2 to 5



Fig. 3. Close up of Figure 2 showing the marked periostitis

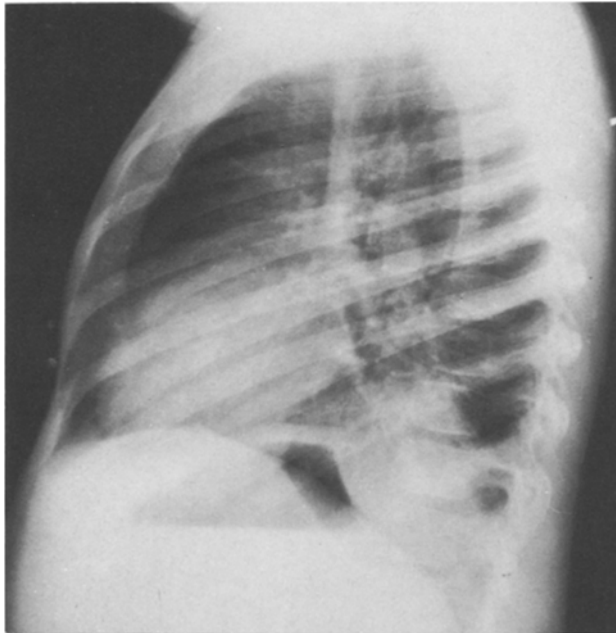


Fig. 4. Lateral chest film showing the lower lobe consolidation and the adjacent mass beneath the diaphragm indenting the gastric fundus posteriorly: the actinomycotic abscess beneath the hemidiaphragm

Incision of the mass revealed copious pus with granules, and actinomycosis israeli was cultured. She was known to have dental caries and excess calculus. A complete recovery was made with adequate penicillin therapy.

Case 3. A girl, aged 7 years, who was mentally normal presented with pain in the left shoulder and general malaise. Chest X-ray on admission showed collapse and consolidation in the left lower lobe. After antibiotics and physiotherapy, no improvement was noted and bronchoscopy failed to show any abnormality. The patient was allowed home but was re-admitted 10 days later with a fluctuant soft tissue mass beneath the left 11th rib. Chest X-ray now showed persistent collapse/consolidation of the left lower lobe with a mass beneath the diaphragm displacing the stomach (Fig. 4).

Surgical incision revealed pus and sulphur granules; actinomycosis was cultured. A post operative sinogram confirmed that the abscess was sub-phrenic, the actinomycotic pneumonia having extended down through the diaphragm. Recovery was complete on suitable antibiotics. There was no significant dental history in this patient.

Discussion

The classical radiological presentation in pulmonary actinomycosis i.e., chronic consolidation, pleural effusion and overlying rib periostitis [5, 10] is now considered the exception rather than the rule. Frank and Strickland [6] presented 6 cases in 1974, of which only one had periosteal reaction. In Flynn and Felson's series [5] of 15 patients in 1961 – only 4 had periostitis. These authors agreed that the periosteal reaction, while highly suggestive when present, was unusual today. In their cases, all adult, the commonest features included chronic consolidation with or without atelectasis, fibrosis, cavitation and pleural reaction, all of which are non specific signs. The lesions in adults were commonly misdiagnosed radiologically

as suggesting bronchial carcinoma and the patients were investigated accordingly [6, 14]. The features that Felson [5] thought diagnostically important, when associated with chronic consolidation, were soft tissue swelling, sinus formation, penetration of fissure or diaphragm and, of course, overlying rib reaction.

All our cases presented clinically with a soft tissue mass on the chest wall and radiologically had chronic consolidation. Two had the characteristic rib periostitis and the third case demonstrated extension through the diaphragm confirming that actinomycosis is no respecter of tissue planes [5]. Thus, contrary to recent literature, our cases had enough features to suggest the diagnosis radiologically.

The definite diagnosis of actinomycosis relies on the demonstration of sulphur granules and eventual culture of the pathogen. Since actinomycosis israeli is a normal commensal of the mouth [1, 7, 9, 14], mere demonstration of its presence in sputum is not diagnostic. Culture, from either an abscess or lung biopsy is required. The role of bronchial brushing has yet to be defined.

We report these cases to draw attention to the association of unusual pathology with mental subnormality. This group of children may have symptoms unvoiced or unnoticed for a considerable time in spite of excellent and careful care. It is only when the illness is florid that it is apparent. Severely mentally subnormal children have bad oral hygiene and dental caries. This is not surprising as a mere inspection of the mouth may require a general anaesthesia [15]. Therefore, a normal commensal organism can produce pathological illness, as it did in two of these three cases. A similar case is reported in *Clinical Paediatrics* by Moses [11].

We recommend that any chronic consolidation, particularly in subnormal children, but in any with known dental sepsis, should be suspected of har-

bouring actinomycosis even without the characteristic radiological signs.

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Dr. H. Carty
Department of Radiology
Alder Hey Children's Hospital
Eaton Road
Liverpool L12 2AP
England