

Pseudomonas aeruginosa abscess masquerading as a slowly growing solitary pulmonary nodule

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Zwillich, C. W. and Ellis, J. H. (1974). *Thorax*, 29, 603–606. *Pseudomonas aeruginosa* abscess masquerading as a slowly growing solitary pulmonary nodule. A case of slowly growing pulmonary nodule due to *Pseudomonas aeruginosa* is reported. This nodule was present on chest radiographs over a 20-year period.

The solitary pulmonary nodule is a challenging clinical problem. Steele (1964) reviewed 887 resected solitary nodules and found 53% granulomas, 36% malignant tumours, and 8% haematomas. This is by no means a complete list of all the causes of solitary pulmonary nodules but encompasses the vast majority of them. We have recently evaluated a patient with a nodule that had slowly enlarged over a period of more than 20 years and proved to be caused by *Pseudomonas aeruginosa*. The case is summarized in this report because, to our knowledge, this organism has not previously been known to cause a solitary pulmonary nodule.

CASE REPORT

A 46-year-old labourer was first admitted to hospital in 1946 because of an abnormality found on a routine chest radiograph. At that time the history and physical examination were entirely normal. The radiograph showed a round density in the apical segment of the right lower lobe. Further evaluation included skin tests for tuberculosis, bronchoscopy, and bronchograms; these were negative.

The patient was discharged without a specific diagnosis and was followed yearly with chest radiographs. He was admitted for the second time in 1973 for re-evaluation of the nodule which had enlarged slowly when the films of 1966 were compared with those of 1973 (Figs. 1 and 2).

The history was again completely unrevealing. The patient was currently employed as a utility linesman and was very active in sports. He specifically denied dyspnoea, cough, haemoptysis, chest pain, anorexia, fever, chills or weight loss. He had no recurrent cutaneous or sinus infections. On physical examination the patient was found to be a muscular, healthy-looking male. His vital signs were normal, including serial

rectal temperatures. The remainder of the examination was entirely normal.

Laboratory evaluation included a normal blood count, sedimentation rate, and urine analysis. Sputum cultures for bacterial, fungal, and mycobacterial pathogens were negative. A PPD-S skin test showed a 15 mm induration at three days. Quantitative immunoelectrophoresis was normal.

Bronchoscopic examination was normal. Brush biopsy was attempted, but the nodule could only be closely approached but not entered.

Thoracotomy was successfully completed and the mass was removed while contained in the apical segment of the right lower lobe. When the specimen was sectioned (Fig. 3) pus exuded from its centre. Gram stains of the material showed Gram-negative rods, which on culture proved to be a pure growth of *Pseudomonas aeruginosa*. Numerous microscopic sections through the wall of the abscess showed chronic inflammation. There was no gross or microscopic evidence of bronchogenic cyst or hamartoma, nor was evidence of granuloma found. No other pathogens were isolated when fungi and anaerobic and acid-fast organisms were sought.

The patient had an uncomplicated postoperative course and was discharged 10 days later. He has remained well.

DISCUSSION

Pseudomonas aeruginosa is not a rare human pathogen and is probably becoming a more frequent cause of pneumonia (Gatmaitan, Carruthers, and Lerner, 1970; Rose, Heckman, and Unger, 1973; Tillotson and Lerner, 1968). The usual clinical manifestation is that of a clearly ill and toxic patient who, if treated unsuccessfully, shows a necrotizing pneumonia at necropsy. Rose (1968) reported a case of *Ps.*

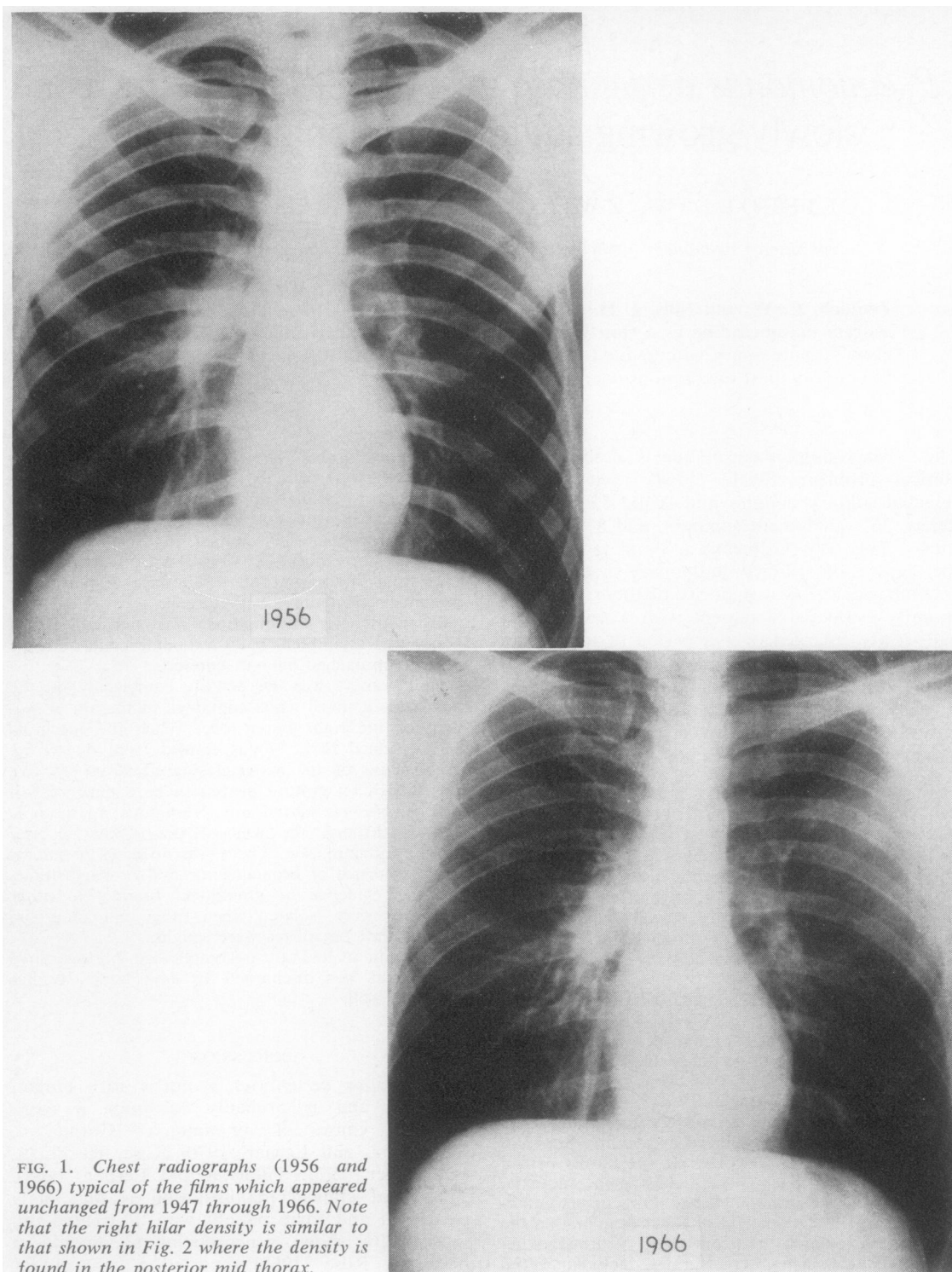


FIG. 1. Chest radiographs (1956 and 1966) typical of the films which appeared unchanged from 1947 through 1966. Note that the right hilar density is similar to that shown in Fig. 2 where the density is found in the posterior mid thorax.

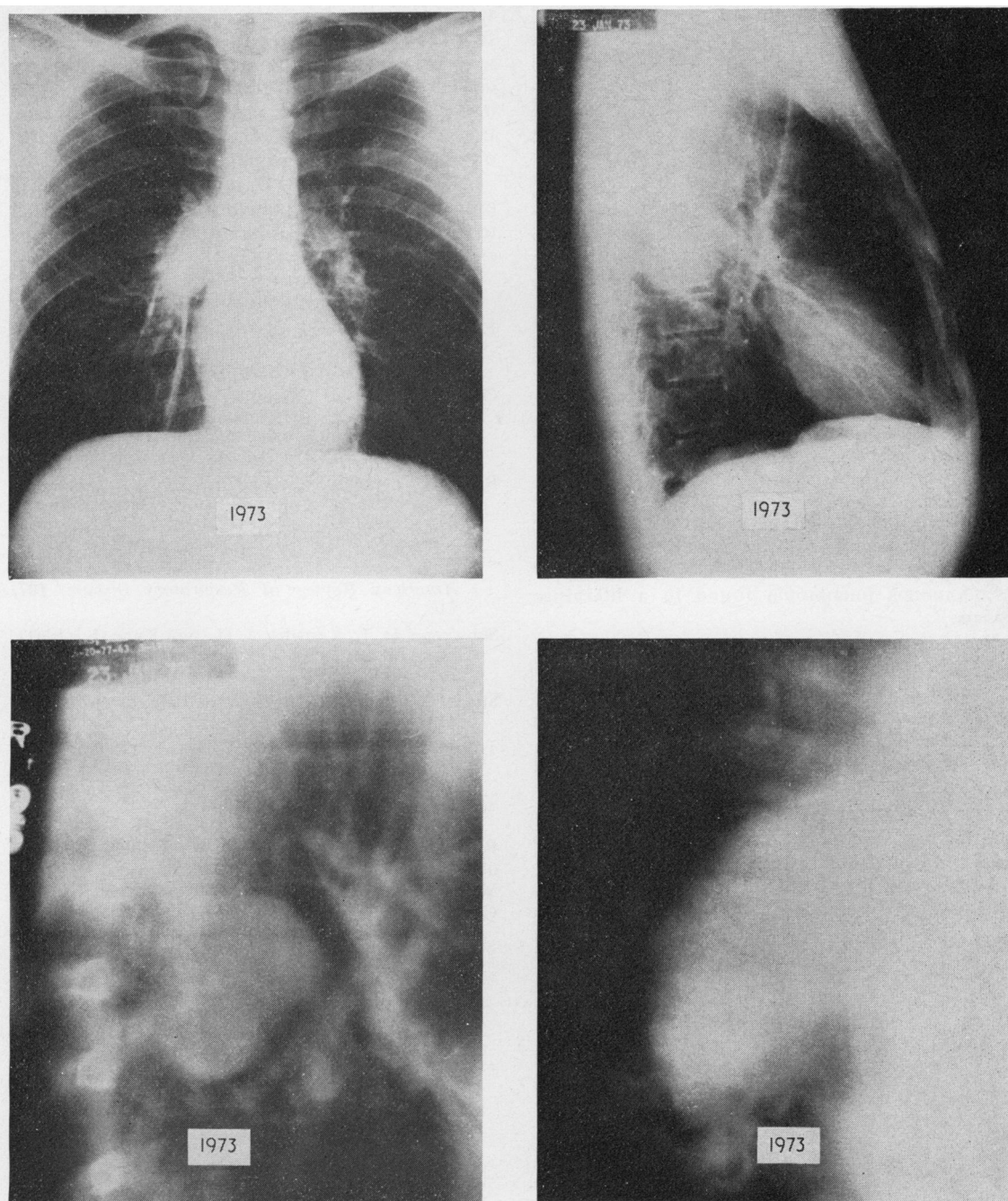


FIG. 2. PA and lateral chest radiographs and tomograms (1973), demonstrating enlargement of the mass, its lobulated, non-calcified configuration, and its position in the apical segment of the right lower lobe.

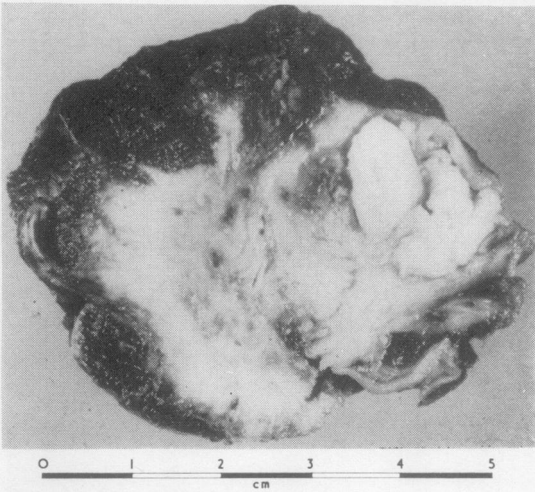


FIG. 3. The lobulated mass is shown cut through its necrotic centre.

aeruginosa pneumonia in a normal adult male who finally succumbed after five months of infections. This was the longest clinical course of *Pseudomonas* pneumonia found in a literature review.

Pseudomonas may rarely cause a somewhat more chronic pulmonary parenchymal infection in the form of a lung abscess, but even here the patients have symptoms associated with an infection lasting for weeks to months (Eriksen, Jensen, and Amdrup, 1964; Schweppe, Knowles, and Kane, 1961).

The case presented here therefore seems very unusual for several reasons. The patient had no known chronic illness predisposing him to *Pseudomonas* pulmonary infection, nor did he have absent delayed hypersensitivity or circulating

gamma globulin abnormality. The nodule was well seen on chest radiographs for 27 years, and careful bacteriological and pathological study when it was removed showed no pathogens other than *Ps. aeruginosa*. It is possible that the *Pseudomonas* infection occurred in previously damaged lung tissue, but we have neither historical nor pathological evidence to support this.

Ps. aeruginosa must be a rare cause of a slowly growing pulmonary nodule but should be added to the already long differential diagnosis of this entity.

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