Mycotic aortic aneurysm probably caused by a pleural empyema

A 53 year old man was admitted with dyspnoea. A chest radiograph and CT scan suggested bilateral encapsulated pleural empyema (fig 1A and B). Pleural puncture produced a massive purulent discharge which grew *Streptococcus pneumoniae*, confirming the diagnosis. The CT scan also showed an enlarged diameter of the thoracic aorta near the diaphragm (4.25 cm; fig 1B). After starting treatment with antibiotics and pleural drainage with flushing, the patient improved rapidly until day 4 when he experienced sudden dyspnoea and had a fatal respiratory and circulatory arrest. Necropsic examination showed pleurisy but no pneumonia or embolism. At the diaphragmatic level the aorta had two perforations (5×12 and 1×2 mm) with granulocytic infiltrations, proving infection (fig 2).

Mycotic aneurysms are generally acknowledged to be caused either by haematogenous bacterial seeding to the intima or the vasa vasorum; lymphatic spread; extension of a contiguous extravascular infection; or traumatic inoculation.¹ In this patient the external layers of the vessel showed infiltrations in addition to the intima. This finding, in combination with the pleural empyema, suggests that the

Figure 1 (A) Supine chest radiograph on admission. (B) CT scan at thoracic level 11/12 with arterial contrast. Asterisks, empyema fluid; arrow, aortic luminal expansion; l, lung; a, pulmonary atelectasis; sto, stomach; spl, spleen; bg, bowel gas.

Figure 2 (A) Macroscopic post mortem view of the aortic defect with two perforation sites (arrows) partly covered by a thrombus (asterisk). (B) Histological cross section of the aorta at the site of perforation; arrow, outer facet of the vessel; asterisk, luminal side.

aneurysm was caused by direct bacterial extension from the pleural space rather than haematogenously. Although we cannot fully exclude haematogenous spread as an alternative mechanism, blood cultures were negative and a clinical examination 3 weeks before the incident had been unremarkable. Pleural empyema or pneumonia causing a mycotic aortic aneurysm is a recognised but rare mechanism that has mainly been associated with *S pneumoniae* infection.² Such an aneurysm should never be overlooked when treating a patient with pleural empyema (risk of rupture and contra-indication for streptokinase). Surgery is the treatment of choice.³

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