Aneurysms are a well known complication of generalized infectious diseases such as septicemia or endocarditis [1]. Aneurysms caused by tuberculosis are classic but more rarely observed, and may affect every arterial axis, but mainly cerebral arteries during the course of a tuberculous meningitis [2]. More than one hundred cases of aortic tuberculosis have been reported since the first description by Weigert in 1882 [3]. About 50% of these cases were aneurysms [4]. Such aortic aneurysms carry a high risk of rupture and terminal collapse.

To our knowledge, successful treatment of a tuberculous aneurysm of the descending thoracic aorta has only been reported in five cases [5–9]. We report another case with this location, successfully cured by surgery and we discuss the physiopathology of such lesions.

Report

A 57-year-old white woman was referred to our department in March 1985 for evaluation of dyspnoea with fever, anorexia and asthenia.

A chest X-ray revealed numerous bilateral small opacities. A limited retrocardiac opacity 2–3 cm in diameter, was also noted. Smears obtained from sputum, gastric fluid, and bronchoscopic aspiration disclosed acid-fast bacilli, and a diagnosis of miliary tuberculosis was made. The liver was enlarged, alkaline phosphatase level was elevated, and a liver biopsy disclosed histologic lesions of parenchymal tuberculosis. The patient was treated with isoniazid, rifampicin and ethambutol for three months and with isoniazid and rifampicin for a further six months. Patient compliance was good and the treatment was carefully supervised. Two months after the initiation of the treatment a computed tomography (CT) of the chest was performed to obtain more information on the retrocardiac opacity, which was persistent on the chest X-ray. It was defined as a supradiaphragmatic para-aortic mass of the left costo-vertebral region, 10–20 UH in density, not modified after contrast injection (fig. 1). This was initially interpreted as an encapsulated effusion of the left postero-inferior mediastinal pleura, and no parenchymal lesion was suspected.

A year later, the patient was admitted to the emergency ward because of haemoptysis of moderate intensity. A chest X-ray disclosed a considerable enlargement of the left retrocardiac opacity (fig. 2). A fiberoptic examination of the bronchial tree showed blood and clots within a left postero-basal segmental bronchus. Because of a suspected haemorrhagic risk, aspiration was limited and no biopsy was made. A CT of the chest showed a large intra-pararenchymal tumour-like opacity of the left costo-vertebral angle with an ill-defined margin, adjacent to the posterior and left lateral wall of the aorta. After contrast injection, the centre of this mass was opacified at the same intensity as the lumen of the aorta, suggesting a direct communication of a cavity with the blood stream (fig. 3). The aneurysmal nature of the tumour was highly suspected, and an aortography confirmed this hypothesis. A spherical aneurysm 3 cm in diameter was connected to the left wall of the descending thoracic aorta, in its supra-diaphragmatic terminal portion (fig. 4).

A thoraco-diaphragmo-laparotomy was performed in March 1986. The aneurysmal mass was firmly adherent to the lung parenchyma of the inferior left lobe, and was surrounded by an inflammatory tissue without abscess. After heparinization (0.5 mg·kg⁻¹) proximal and distal cross-clampings of the aorta were placed without shunt or medullar or renal protection. Blood pressure was controlled with nitroprusside. The aneurysm and the adjacent aorta were resected.
and the aorta was reconstructed with a Dacron prosthetic graft, 18 mm in diameter. The graft was coated with an epiploplasty. The post-operative course was uneventful, and the patient was discharged on the twentieth post-operative day. On macroscopic examination, the aneurysm was seen as an abnormal outpouching of the wall of the aorta with a circular neck of 15 mm in diameter. The size of the cavity was 30 x 50 mm, and it was partially filled with thrombotic material.

Histologic examination (Dr. A.Y. De Lajartre, G. and R. Laennec Hospital, Nantes) showed that the aneurysm was of the false variety. The aneurysm wall was essentially composed of inflammatory tissue infiltrating the surrounding lung parenchyma. Granulomatous formations were observed which contained numerous giant cells, but no residual arterial structure was present. Tuberculous granulation tissue was also seen within the lung parenchyma in contact with the aneurysm. No tuberculous bacilli were found in the aneurysm wall, either at microscopic examination or in cultures. However, a six month antituberculous regimen (rifampicin, isoniazid and pyrazinamide) was restarted.

A year after surgery, the patient is doing well. An angiographic control of the aorta was performed four months after the intervention and was normal.

Discussion

In 1965, 110 cases of aortic tuberculosis were collected by Silbergleit et al. [4], of which 51 were aneurysms. The majority of these patients did not survive and the diagnosis was made at autopsy. Tuberculous aneurysms may injure every part of the
TUBERCULOUS PSEUDO-ANEURYSM OF THE AORTA

aorta, and involve the thoracic and the abdominal aorta with the same frequency [10]. The present case concerns the thoracic descending aorta in its supradiaphragmatic portion and shows some similarities with the case reported by SUNADA et al. [7].

In recent years, with tuberculosis becoming less frequent, tuberculous aneurysm of the aorta appears as a rare but always life-threatening condition. The poor prognosis has been deeply modified by surgery and the use of prosthetic material. Thus our case was successfully cured by aneurysm resection and aortic reconstruction by a Dacron prosthetic graft.

An early description of surgical management of a tuberculous aneurysm of the thoracic aorta was published in 1959 by DE PROPHETIS et al. [5]. The aneurysm discovered during thoracotomy was simply resected. The patient only survived for a short time because of the rupture of a second aortic aneurysm not visualized at thoracotomy.

Tuberculous aortic aneurysms are of the false variety, and proceed by direct extension of a tuberculous lesion into the aorta wall [10-12]. The primary focus reaching the aorta wall may be a lymphadenitis, a Pott abscess, an empyema, or a tuberculous lesion of the lung parenchyma as in the present case.

The association with a miliary tuberculosis seems to be quite frequent [8]. Felson et al. [8] suggest that miliary dissemination is more likely to be the consequence than the cause of the aneurysm. Our observation gives some evidence for such a mechanism. After the histological examination, the nature of the initial retrocardiac opacity was reconsidered. We believe that a parenchymal tuberculous lesion eroded the aorta wall and that the aortic transmural damage may have been the source of a haematogenous dissemination of tuberculous bacilli. The medical treatment of the miliary tuberculosis was efficient, for no bacilli were found within the residual histological lesions in the aneurysm wall. The formation of the aneurysm may thus be considered as a mechanical consequence of the aortic perforation.

References


RÉSUMÉ: Un pseudo-anevrisme tuberculeux de l'aorte thoracique descendante a été mis en évidence chez une femme de 57 ans présentant des hémoptysies trois mois après la fin du traitement médical bien conduit d'une miliary tuberculose. Après angiographie aortique, l'anevrisme a été rééquée et l'aorte a été réparée avec une prothèse en Dacron, la patiente se porte bien un an après l'intervention.