An Unusual Case of Epigastric and Back Pain
Expanding Descending Thoracic Aneurysm Resulting From Tertiary Syphilis Diagnosed With Positron Emission Tomography

Paola De Rango, MD, PhD; Giuseppe Vittorio De Socio, MD, PhD; Valeria Silvestri, MD; Gioele Simone, MD; Fabio Verzini, MD, PhD, FEBVS

A 63-year-old African woman immigrated to Europe presented to our hospital with increasing epigastric pain radiating to back, unresponsive to proton-pump inhibitors, lasting for a week. There was no nausea, vomiting, diarrhea, or fever. History was positive for diabetes mellitus, hypertension, and previously treated pulmonary tuberculosis. On examination, the patient was afebrile, and there was no lymphadenopathy. Amylase and lipase levels were normal, whereas erythrocyte sedimentation rate (120 mm/h) and C-reactive protein (14 mg/dL) were increased. Superior endoscopy showed normal findings; abdominal ultrasound was negative. Computed tomography (CT) angiography revealed a 10×23-mm saccular aneurysm of thoracic aorta (D9 level) with localized dissection and thickening of the aortic wall (Figure 1). There was lymph node enlargement at hilum and along bronchopulmonary, thoracic, and lumbosacral chains. Apical pleural thickness and multiple calcifications, findings of previous pulmonary tuberculosis, were detected. Fluorine-18 fluorodeoxyglucose positron emission tomography–CT showed marked radiotracer enhancement at the periaortic level D8 to D9 (Movie in the online-only Data Supplement). These findings of increased glucose metabolic activity were indicative of inflammatory aortic process (aortitis). Full serological tests were performed. Gram staining and acid-fast stain of the sputum did not show evidence of organisms. Two sets of blood cultures and urine and stool cultures, as well as HIV test, were negative. Syphilis serology revealed rapid plasma reagin titer of 1:8, with IgM negative, a positive fluorescent treponemal antibody test, and treponema pallidum particle agglutination assay titer of 1:320. Diagnosis of tertiary cardiovascular syphilis with related aortitis and presumptive luetic symptomatic aneurysm of thoracic aorta was made, and treatment with intravenous ceftriaxone, 2 g/d, for 15 days was established. After 1 week, CT scan showed expansion of the aneurysm (12×27 mm) and pleural effusion. Because of high risk for an open surgical procedure and the suitable anatomy for endovascular repair, expanding aneurysm was successfully treated by thoracic aortic stent graft (Figure 2). After 6 months, the patient was asymptomatic, syphilis serology was negative (rapid plasma reagin titer, 1:4), and CT showed aneurysm exclusion (Figure 3). Syphilis remains a global health problem with local recent resurgence because of immigration. In the early course of infection, spirochetes may reach aorta adventitia, and ≥30% of untreated syphilitic patients develop aortitis (Figure 4). The arterial wall is weakened, and after many years, mycotic aneurysm, with high likely of rupture, can occur as a rare complication of tertiary syphilis. More common in the ascending aorta and aortic arch, ≈10% to 20% syphilis aneurysms locate in descending aorta.¹ There are no pathognomonic imaging features to prompt early diagnosis of syphilitic aneurysms, and the most important examination relies on syphilitic serology. Positive treponemal assays and fluorine-18 fluorodeoxyglucose positron emission tomography–CT findings of mycotic aneurysm allowed presumptive diagnosis of syphilis aneurysm in this woman despite the infrequent location and the lack of other features of tertiary syphilis. Negative serology and acid-fast stain helped differential diagnosis with other potential microbiological causes of saccular thoracic aneurysms, such as mycobacterial. Treatment by aortic stent graft has been reported in a few cases,² as an effective, even if often only temporary, tool to exclude thoracic syphilitic aneurysms. Antibiotic therapy, starting before stent grafting, and careful surveillance with serology and CT angiography evaluation, after repair, are required. Syphilis serological screening is still important to rule out the disease in Western countries, especially in the presence of increased erythrocyte sedimentation rate and C-reactive protein values and fluorodeoxyglucose positron emission tomography–CT angiography imaging suggestive of mycotic aneurysms.

Disclosures

None.

References


**Keywords**: aneurysm, aortic aneurysm, thoracic aortitis, syphilis, cardiovascular

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**Figure 1.** Computed tomography angiography scan: axial and 3-dimensional reconstruction revealing a saccular aneurysm of thoracic aorta at D9 level with localized dissection. H indicates head; F, foot; L, lateral; and P, posterior.

**Figure 2.** Thoracic aortic stent graft (angiography).

**Figure 3.** Computed tomography angiography (CTA) imaging follow-up after 4 months (B) compared with preoperative CTA scan (A).

**Figure 4.** Pathogenesis of syphilis aneurysms.
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