Large vessel vasculitis: syphilitic aortitis as a reversible mimicker

Cadório MJ[1], Albuquerque F[1], Oliveira J[1], Martins AJ[2], Marinho J[2], Teixeira J[3], Luís M[1], Saraiva A[1]

[1] Rheumatology department, Local Health Unit of Coimbra

[2] Infectious Diseases department, Local Health Unit of Coimbra

[3] Dermatology and Venereology department, Local Health Unit of Coimbra

Short title: Syphilitic aortitis

Correspondence to

Maria João Cadório

E-mail: 17741@ulscoimbra.min-saude.pt

Submitted: 05/08/2025

Accepted: 12/11/2025

Dear editor,

Large vessel vasculitis (LVV) encompasses rare conditions characterized by inflammation of the aorta and its major branches[1]. The most common subtypes are giant cell arteritis (GCA) and Takayasu arteritis, differing primarily by age of onset and geographic distribution[2]. The differential diagnosis extends beyond these entities and includes mimickers like infectious aortitis, connective tissue diseases, and malignancies[3]. Given the potential for significant morbidity, diagnosis integrates clinical assessment, labs and advanced imaging techniques, such as ^{18}F-fluorodeoxyglucose positron emission tomography (FDG-PET).

A 70-year-old Caucasian woman presented with a three-month history of fever (maximum axillary temperature of 38.5ºC), night sweats, fatigue, anorexia, and unintentional weight loss of 11% of body weight. Initial workup revealed normocytic and normochromic anemia (hemoglobin 9.7 g/dL, normal range (N): 11.8–15.8 g/dL), marked thrombocytosis (platelet count 830 x10^9/L, N: 140–385 x10^9/L), mild leukocytosis with normal differential (leukocytes 11.04 x10^9/L, N: 3.60–10.50 x10^9/L), and elevated acute phase reactants (C-reactive protein (CRP) 13.8 mg/dL, N: <0.5 mg/dL; erythrocyte sedimentation rate (ESR) 120 mm/h, N: 1–20 mm/h). Ferritin levels were also increased (390 ng/mL, N: <300 ng/mL), while B12 vitamin, folic acid, thyroid function, plasma protein electrophoresis, viral serologies (HBV, HCV, HIV), and blood cultures returned normal or negative. Endoscopic evaluation, transthoracic echocardiogram, and thoracoabdominal CT scan were unremarkable. ^{18}FDG-PET scan revealed diffuse hypermetabolism of the aortic wall, with involvement of the brachiocephalic trunk as well as the bilateral subclavian, internal mammary, and common iliac arteries, suggestive of active vasculitis (Figure 1A). She was referred to rheumatology.

At first rheumatology consultation, six months after symptom onset, symptoms had resolved. There were no signs of GCA or polymyalgia rheumatica. Physical exam was unremarkable and repeat labs showed normalization of hemoglobin (12.7 g/dL), leukocyte count (8.0 x10^9/L), platelet count (370 x10^9/L) and CRP (0.49 mg/dL). ESR was mildly elevated (28 mm/h), and liver enzymes remained slightly increased (alanine transaminase 45 U/L, N: <31 U/L; aspartate transaminase 132 U/L, N: <34 U/L; gamma-glutamyl transferase 45 U/L, reference range: <38 U/L). Temporal artery Doppler ultrasound was normal. Despite clinical and laboratory improvement in the absence of immunosuppressive or antibiotic therapy, a follow-up ^{18}FDG-PET scan showed persistent vascular hypermetabolism (Figure 1B).

Given the atypical clinical picture, LVV mimickers were re-evaluated. IgG4 levels were normal, but treponemal serology was positive (IgG/IgM 14.3 S/CO, N: <1.0; rapid plasma reagin was non-reactive, and the Treponema pallidum hemagglutination assay titer was 1:160, N: <1:80). The patient denied history of high-risk sexual behaviors or previous cutaneous lesions suggestive of primary or secondary syphilis, as well as known prior syphilis infection. Syphilitic aortitis was suspected. She was referred to infectious diseases and treated with intramuscular benzathine penicillin G (2.4 million units weekly for three weeks). Two months post treatment, a third ^{18}FDG-PET showed resolution of vascular inflammation (Figure 1C). CT angiography excluded aneurisms. She remains asymptomatic at 1-year follow-up.

Approximately 25-40% of untreated cases may progress to late complications[4]. Tertiary syphilis, occurring years after initial infection, can cause cardiovascular involvement, such as syphilitic aortitis, due to endarteritis of the vasa vasorum, potentially leading to aneurysm, aortic regurgitation, or stenosis[4]. Aortic syphilis is a rare but significant condition, often presenting asymptomatically until a complication arises. Diagnosis typically relies on serologic testing alongside compatible imaging findings. ^{18}FDG-PET and CT scan are key to identify inflammation and differentiating from other vasculitides. Penicillin remains the treatment cornerstone and typically leads to remission. Early recognition is vital to prevent severe complications[4,5].

This case highlights the importance of considering infectious causes, such as syphilis, in atypical LVV presentations. As in Takayasu arteritis, where routine imaging is standard to monitor silent disease progression, follow-up routine imaging should be considered for accurate management of all forms of vasculitides.

Tables and Figures

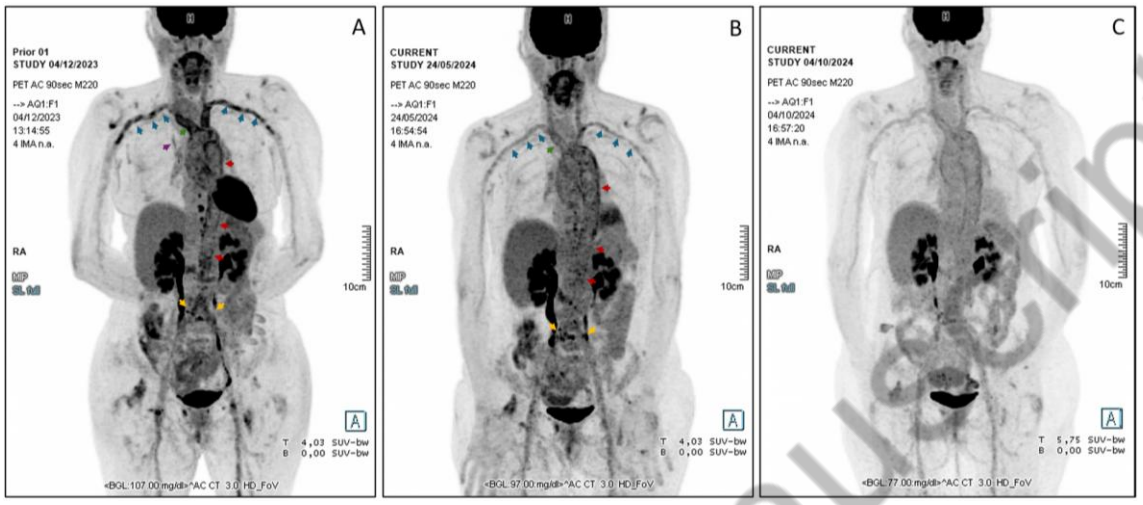

Figure 1. ^{18}FDG-PET in the coronal view at different time points. **(1A)** At initial presentation: maximum standardized uptake value (SUVmax) of 4.8 in the aortic arch and descending aorta (red arrows), 5.4 in the brachiocephalic trunk (green arrow), 4.7 in the left subclavian artery (blue arrows), 4.3 in the right subclavian artery (blue arrows), and 2.8 bilaterally in the internal mammary arteries (purple arrow). **(1B)** Before antibiotic treatment: SUVmax of 4.6 in the aortic arch and descending aorta. **(1C)** Two months after antibiotic treatment: SUVmax of 4.1 in the aortic arch and descending aorta.

References

1. Jennette JC, Falk RJ, Bacon PA, et al. 2012 revised International Chapel Hill Consensus Conference Nomenclature of Vasculitides. Arthritis Rheum. 2013;65(1):1-11. https://doi.org/10.1002/art.37715

2. Pugh D, Karabayas M, Basu N, Cid MC, Goel R, Goodyear CS, et al. Large-vessel vasculitis. Nat Rev Dis Primers. 2022;7(1):93. https://doi.org/10.1038/s41572-021-00327-5

3. Zarka F, Veillette C, Makhzoum JP. A review of primary vasculitis mimickers based on the Chapel Hill Consensus Classification. Int J Rheumatol. 2020;2020:8392542. https://doi.org/10.1155/2020/8392542

4. Cohen SE, Klausner JD, Engelman J, Philip S. Syphilis in the modern era: an update for physicians. Infect Dis Clin North Am. 2013;27(4):705-22. https://doi.org/10.1016/j.idc.2013.08.005

5. Drago F, Merlo G, Rebora A, Parodi A. Syphilitic aortitis and its complications in the modern era. G Ital Dermatol Venereol. 2018;153(5):698-706. https://doi.org/10.23736/S0392-0488.16.05522-X