A 53-year-old Chinese male smoker with no other risk factors was admitted with non-ST elevation myocardial infarction. Echocardiography (Panels A and B; see Supplementary data online, Video S1) revealed moderate to severe (Grade 3) aortic regurgitation with left ventricle dilatation and severe global left ventricular dysfunction. Coronarography (Panel C; see Supplementary data online, Video S2) showed critical left main ostial stenosis with subocclusive fibrous plaque by IVUS, with a minimal luminal area of 3.8 mm² (Panel D: tunica intima, red arrow; media, blue arrow; adventitia, arrow tip; plaque, asterisk). Aortic valve replacement and double coronary artery bypass graft were indicated.

Intraoperative transesophageal echocardiography demonstrated aortic root wall thickening (Panel E; see Supplementary data online, Video S3), and in vivo operative findings of ascending aorta inflammation involving aortic valve leaflets and the left main ostium, with puctiform appearance (Panel F), which raised clinical suspicion of aortitis.

Serological tests showed positive non-treponemal (RPR 1/256) and treponemal (ELISA) tests. The patient received a 2-week treatment of Penicillin G sodium. Intraoperative biopsy, in which the effectiveness decreases in late stages of syphilis due to scant organism load, failed to detect Treponema pallidum (see Supplementary data online, Figure S1).

Cardiovascular syphilis at the tertiary stage is caused by endarteritis obliterans of the aortic vasa vasorum and medial necrosis of the aorta, resulting in aortitis with ascending aortic aneurysms, aortic regurgitation, and less commonly, coronary ostial stenosis.

Re-emergence of syphilis infection has been observed in developing countries within the last decade driven by demographic shifts and high-risk sexual behaviours, particularly among homosexual males, HIV-infected patients (due to epidemiological synergy between syphilis and HIV), and drug abusers.

Supplementary data are available at European Heart Journal — Cardiovascular Imaging online.