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Probable Syphilitic Aortitis Documented by Positron Emission Tomography

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Abstract

Positron emission tomography (PET) has been used to aid in diagnosis of inflammatory and infectious disease. We describe the case of a patient with early-latent syphilis with increased metabolic activity along the aorta detected via PET, suggesting probable aortitis. Three-months following treatment, the PET showed apparent resolution of the aortitis.

Case Report

We report an abnormal positron emission tomography (PET) scan in a 50-year old male with early latent syphilis in Lima, Peru. The patient is a participant of an ongoing cohort study among at-risk men who have sex with men (MSM) in Lima [1]. As part of the study participants' quarterly clinical visit, the patient received a medical examination, counseling, and a serological test for syphilis. This patient had prior history of treated syphilis in April, 2013, when he received one dose of benzathine penicillin 2.4 MU. The patient was HIV-infected and had been on ongoing antiretroviral therapy (ART) for 10-years. The medical examination showed that he had become resistant to ART, with a viral load of 15,000 copies/ml, and a CD4 T-cell count of 380 cells/ml. The patient's clinical examination showed non-tender multiple lymphadenopathies in the cervical and inguinal region (2 × 2 centimeters [cm]). He had a rapid plasma reagin (RPR) titer of 1:256, and his Treponema pallidum particle agglutination assay (TPPA) result was reactive. Per study protocol, we obtained a whole body PET scan.

The PET scan confirmed the generalized lymphadenopathy, more prominent in the bilateral inguinal regions with increased glucose metabolism and standardized uptake value (SUV

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max) 3.6. (Figure 1a) In addition, there was also mild asymmetrically increased metabolic activity along the ascending and the arch of the aorta which is compatible with aortitis (Figure 2a). The patient did not have clinical or radiologic evidence of aortic disease. One dose of benzathine penicillin 2.4 MU was subsequently administered.

Three months later the patient was examined again. The RPR titer declined to 1:16, and the lymphadenopathy was no longer apparent on physical examination. The repeat PET scan showed an apparent resolution of increased metabolic activity along the aorta and the inguinal lymph nodes. (Figures 1b and 2b).

Discussion

Our case report describes apparent aortitis in a recently acquired case of syphilis in a patient co-infected with HIV. The resolution of the aortitis within three-months of effective treatment (demonstrated by the 4-fold decline in RPR titer), suggests that the aortitis was early. In secondary syphilis inflammation has been previously described in association with hepatitis, uveitis, meningitis, and two cases of aortitis. [2, 3] Aortitis, if left untreated, can result in aortic root dilation could result in aortic insufficiency.

Investigators recently reported an incident finding of widespread syphilitic lymphadenopathy in early syphilis by PET scan [3]. Other reports have suggested that PET scans may be promising techniques for both diagnosis and follow–up of patients with syphilitic aortitis [2-4]. Ours is a case of co-infection of early syphilis, HIV and early aortitis. HIV infection has been associated with increased risk of neurosyphilis [5], however, whether HIV is associated with increased risk of syphilitic aortitis is unknown. Further, lymphadenopathy is a well-known sign of syphilis and HIV infection, in our case, the resolution of lymphadenopathy is an indicator of effective syphilis treatment [6].

Since the introduction of penicillin, cardiovascular syphilis disease is a rare diagnosis. Aortitis of the ascending aorta is a possible life-threatening sequelae of untreated syphilis. Since the majority of patients with uncomplicated aortitis are asymptomatic, regardless of etiology, early diagnosis is difficult. While the incidence of tertiary syphilis has declined in recent decades, early syphilis is increasing in men who have sex with men (MSM), especially in HIV-infected MSM. Increased syphilis incidence requires better control measures, and innovative measures to screen and effectively monitor treatment of syphilis. Based on our case and existing literature on this subject, PET scans might be a sensitive tool to monitor inflammation associated with syphilis, particularly in research settings.

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Summary of Findings

PET-scans discovered probable aortitis in an HIV-infected 50-year old male patient with early-latent syphilis. The resolution of the aortitis within three-months of effective treatment suggests that the aortitis was early.

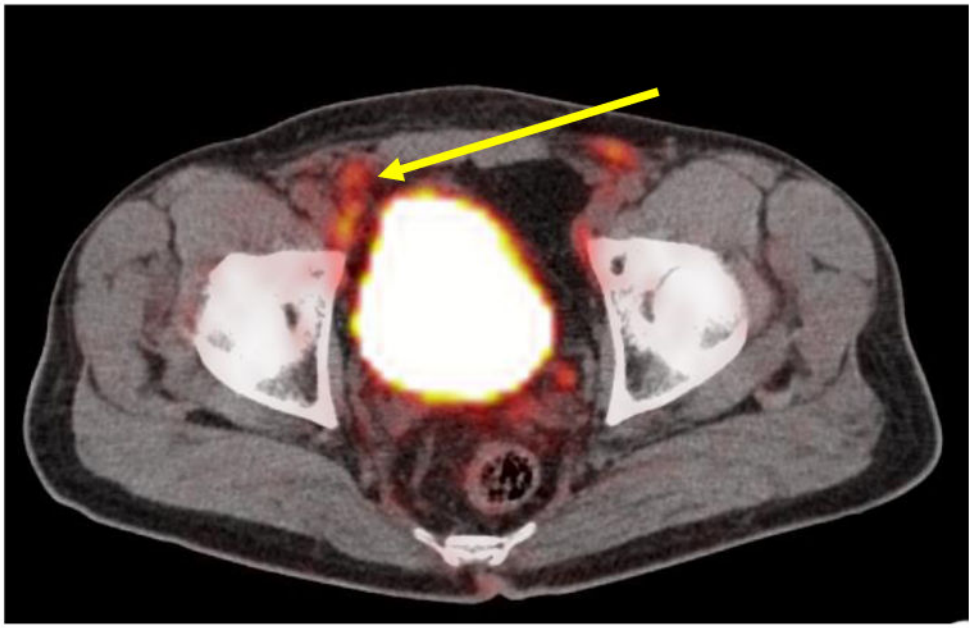

Figure 1a.

PET scan of 50-year old male with early latent syphilis, co-infected with HIV. Generalized lymphadenopathy was discovered, more prominent in the bilateral inguinal regions with increased glucose metabolism and standardized uptake value (SUV max) 3.6 (RPR titer 1:256)

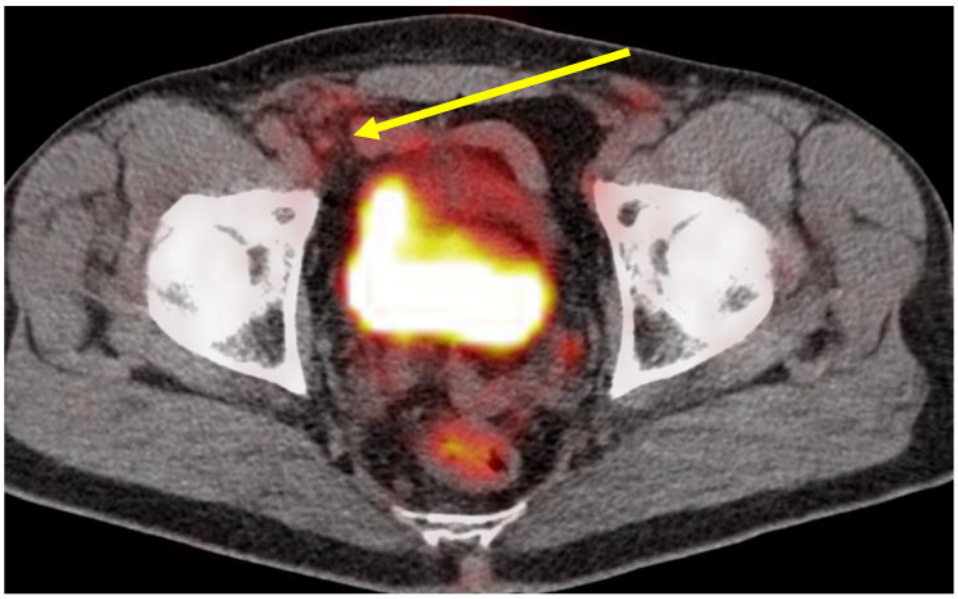

Figure 1b.

Three months following treatment, the repeat PET scan showed an apparent resolution of increased metabolic activity along the aorta and the inguinal lymph nodes (RPR titer 1:16)

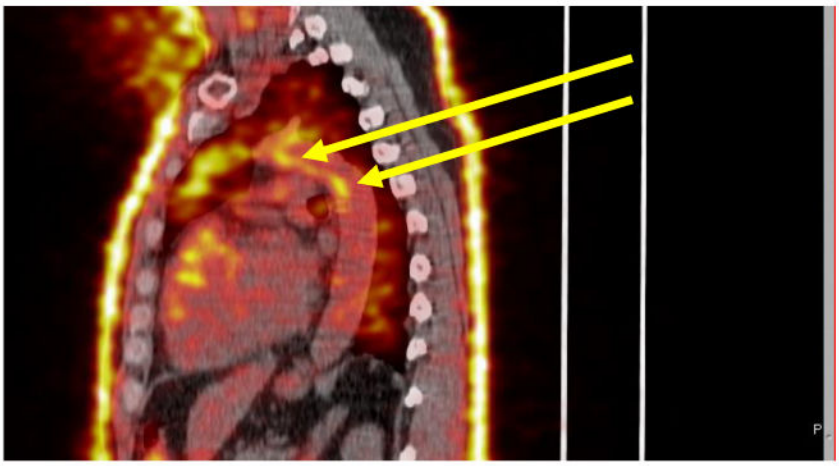

Figure 2a.

PET scan shows areas with metabolic uptake, consistent with active inflammation, which were found in the ascending and the arch of the aorta, indicating apparent aortitis in patient (RPR titer 1:256)

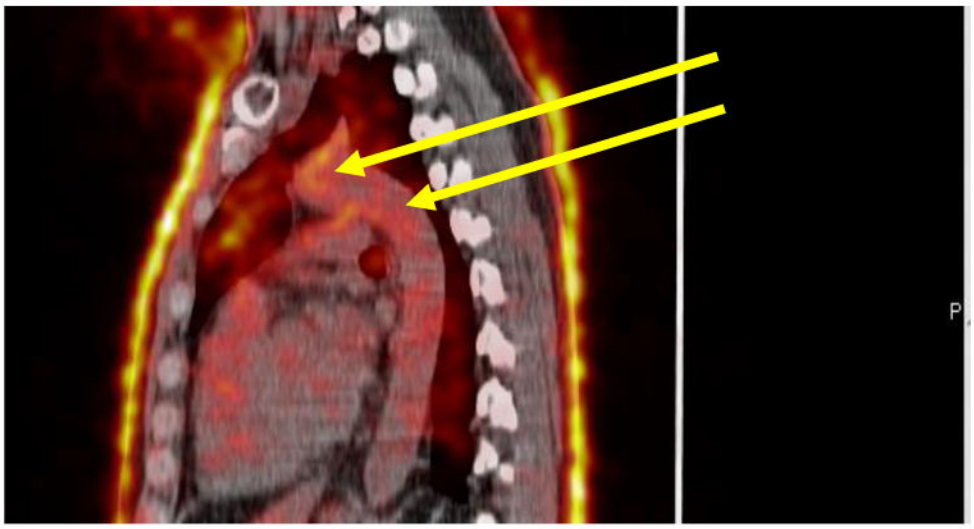

Figure 2b.

Three-months following treatment, repeat PET scan showed an apparent resolution of increased metabolic activity along the aorta (RPR titer 1:16)