Disappearance of FDG uptake on PET scan after antimicrobial therapy could help for the diagnosis of *Coxiella burnetii* spondylodiscitis

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DESCRIPTION

A 55 year-old man was admitted for worsening of a chronic low back pain associated with L4-L5 anterolisthesis, despite taking non-steroidal anti-inflammatory drugs for several months. He had a medical history of high blood pressure and obesity (body mass index, 37 kg/m^2). He lived in the countryside but had no direct contact with animals except his dog. There were no fever, chills, sweats or weight loss. C reactive protein (CRP) was <2.9 mg/L. Radiographs showed L4-L5 anterolisthesis with endplate erosions and bony sclerosis (figure 1A). On MRI (figure 1B), there was a significant enhancement of L4-L5 vertebral endplates and paravertebral soft tissues. Positron emission tomography (PET) CT scan showed an intense uptake of the L4-L5 space (figure 1C). Blood and CT-guided discovertebral cultures remained sterile (including for mycobacteria) and 16s PCR and in-house specific *Coxiella burnetii* PCR were negative. *C. burnetii* serology (Focus diagnostics Q fever immunofluorescent antibody IgG and IgM test kits) was positive and in favour of a chronic Q fever (phase I, IgG 2048; phase II, IgG 4096; IgM were negative). *Brucella* and *Bartonella* were negative. An echocardiogram was performed to exclude vegetations caused by bacterial endocarditis. The patient was treated with doxycycline (200 mg/day) and hydroxychloroquine (400 mg/day) for 10 months. A significant improvement with reduction of the back pain was noticed and the CRP remained <2.9 mg/L. The antibody titres decreased and the pathological uptake of the L4-L5 space on PET scan disappeared when antibiotics were stopped (figure 1D).

Q fever is a worldwide zoonotic acute or chronic infection.[1] Osteoarticular localisations are infrequent, insidious and remain difficult to diagnose.[2 3] PCRs performed on bone biopsy could be negative. Disappearance of a significant spine uptake on PET CT scan and decreasing of antibody titres could help for treatment discontinuation during *C. burnetii* spondylodiscitis.

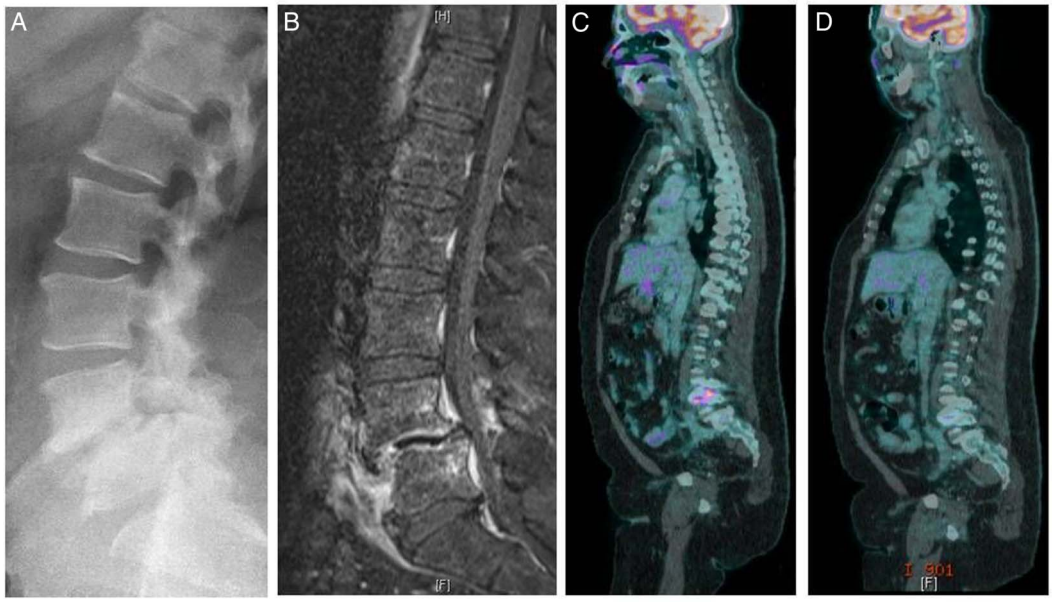

Figure 1 (A) Lateral lumbar radiograph revealing a L4-L5 anterolisthesis; (B) MRI of the lumbar spine, T1-weighted gadolinium sequence, showing a gadolinium enhancement of the L4-L5 vertebral endplates; (C) Positron emission tomography (PET) scan image fusion showing an intense uptake of the L4-L5 space with a maximum standardised uptake value of 7.4; (D) PET scan image fusion showing a significant reduction of the fluorescent deoxyglucose uptake of the L4-L5 space after 10 months of treatment.

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Learning points

- *Coxiella burnetii* has to be suspected in patients with spondylodiscitis with sterile standard cultures from bone biopsy.
- *C. burnetii*-specific PCR and 16s PCR performed on bone biopsy could be negative in patients with *C. burnetii* spondylodiscitis and serology remains the cornerstone of diagnosis.
- Disappearance of a significant spine uptake on positron emission tomography CT scan and decreasing of antibody titres could help for treatment discontinuation during *C. burnetii* spondylodiscitis.

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