PET-CT confirms the diagnosis of pyogenic spondylodiscitis complicated by psoas abscess

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DESCRIPTION

The authors report a case of a 64-year-old woman with a history of diabetes mellitus (DM) and haemodialysis dependent end-stage renal disease admitted to the intensive care unit for hypoglycaemia, hyperkalaemia, elevated white blood cell count and elevated inflammatory markers. During the course of her hospitalisation, she complained of persistent low back pain. Although gadolinium contrast agents are generally contraindicated in these patients due to significant risk of nephrogenic systemic fibrosis, lumbar spine MRI with gadopentate dimeglumine contrast was felt to be absolutely necessary, given the need to confirm spondylodiscitis in order to guide treatment. We adhered to strict departmental protocol with written consent and haemodialysis within hours after the examination. Results showed enhancement of the right L5 pedicle and moderate degenerative disc disease. The findings of right pedicle enhancement were interpreted as non-specific, representing infection or neoplasm. Several days later, an F-18 fluorodeoxyglucose positron emission tomography-computerised tomography (PET-CT) exam identified spondylodiscitis with a right psoas abscess (figures 1–3), a diagnosis confirmed by methicillin resistant *Staphylococcus aureus* (MRSA) bacteraemia. Fortunately, in the year since the MRI, the patient has not reported clinical findings to be consistent with nephrogenic systemic fibrosis.

Pyogenic spondylodiscitis is the major manifestation of haematogenous osteomyelitis in patients over the age of 50, preferentially affecting the lumbar spine.¹ *S aureus* is the major infective agent,

Figure 2 Axial CT image at the L5 vertebral level demonstrates a small fluid collection posterior to the right psoas muscle (arrow).

responsible for greater than 50% of cases.¹ DM is the most common risk factor.¹

The adult intervertebral disc typically is avascular, therefore the marrow in the region of the vertebral body end plate is usually infected first, with subsequent spread to the disc.¹ MRI is the imaging modality of choice with an accuracy of 94%.² Early MRI findings typically include low signal intensity on T1-weighted images in endplate of the affected vertebral body along with contrast enhancement. Further progression usually involves the disc, manifested as high T2 signal.³ Pyogenic spinal osteomyelitis rarely involves the posterior elements of the vertebrae.² Paraspinal abscess is a known uncommon complication, usually seen in advanced cases.³

Figure 1 Sagittal fusion PET-CT image of lumbar spine demonstrates abnormal hypermetabolism within the inferior endplate of L4 and superior endplate of L5, suspicious for spondylodiscitis.

Figure 3 Axial fusion PET-CT image demonstrates abnormal hypermetabolism within the fluid collection posterior to the right psoas muscle compatible with abscess.

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In recent years the role of PET-CT has expanded beyond oncology to include screening evaluation of inflammatory and infectious disorders, such as fevers of unknown origin, prosthetic infections and osteomyelitis.⁴ Several small series have demonstrated a high sensitivity of PET-CT in spondylodiscitis and its ability to differentiate disc infection from endplate degenerative change.³ Recent work also demonstrated that PET-CT may help monitor response to therapy in patients with known spondylodiscitis.⁵

Two components of this case made it unique. First, we could not find reference in the literature on PET-CT diagnosing infectious spondylodiscitis complicated by a psoas abscess. Second, while PET-CT has primarily been used as a screening modality, in this case it confirmed the diagnosis, a role primarily relegated to MRI. More investigation may better elucidate its capacity to diagnose spondylodiscitis, particularly in patients in whom MRI or gadolinium-based contrast agents are contraindicated.

Learning points

- In cases of suspected spondylodiscitis with clinical ambiguity, equivocal MRI findings or those where MRI or gadolinium-based contrast agents are contraindicated, PET-CT may be a reasonable alternative to confirm this diagnosis.
- Diabetic patients with elevated inflammatory markers and low back pain warrant further work-up for pyogenic spondylodiscitis.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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