Fluorodeoxy glucose-positron emission tomography as a useful diagnostic tool for reactive arthritis

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February 18, 2021

Abstract

FDG-PET/CT is expensive but useful for diagnosing difficult cases of reactive arthritis. It can reveal enthesitis and arthritis, which are a feature of reactive arthritis.

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Funding: None.

Conflicts of Interest : None.

Authorship: All authors had access to the data and a role in writing the manuscript.

Acknowledgments: NA.

Article type: Images in Clinical Medicine

Running head: FDG-PET/CT for reactive arthritis

Text word count: 532 words

Number of figures: 2

References: 2

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Key words : FDG-PET/CT; reactive arthritis

Key Clinical Message: FDG-PET/CT can reveal abnormal accumulation at the affected joints and enthesitis, suggesting reactive arthritis.

In December 2014, a 46-year-old man was referred to our hospital with a 1-month history of acute polyarthralgia. Arthralgia acutely appeared in the metacarpophalangeal (MP) joint of the hallux, and it consecutively spread to the left foot joint, right knee joint, lumbar region, left shoulder joint, MP joint of the left thumb, and distal interphalangeal (DIP) joint of the right middle finger. He had no medical or family history. Physical examination showed: body temperature, 37·6°C; blood pressure, 114/65 mmHg; and pulse rate, 100 beats/min. His affected joints showed swelling, redness, warmth, and tenderness. Laboratory examination showed high liver enzyme (aspartate transaminase level, 42 U/L; alanine transaminase level, 116 U/L) and C-reactive protein levels (4·0 mg/dL). The rheumatoid factor and anti-nuclear antibody were negative. The urine white blood cell (WBC) was 2+, and the nitrite and culture were negative. Synovial fluid from the right knee indicated a WBC count of 14,600/μL. A culture of the general and acid-fast bacteria was negative. Articular radiography showed no bone destruction. Fluorodeoxyglucose-positron emission tomography (FDG-PET/CT) showed abnormal accumulation at the affected joints and enthesitis (arrow) of the left shoulder joint (Figure 1). We suspected reactive arthritis from the history of acute onset and progressive oligoarthritis with enthesitis. After asking detailed questions, the patient admitted to being sexually active with multiple partners, which he first denied, and reported feeling slightly painful urination about 1 week before joint pain. Polymerase chain reaction (PCR) of *Chlamydia trachomatis* from urethra secretion was positive. PCR of *Neisseria gonorrhoeae* and the serum HIV antibody were negative. Reactive arthritis due to *C· trachomatis*was diagnosed. We started azithromycin (1 g orally) for chlamydial urethritis and non-steroidal anti-inflammatory drugs for arthritis. Urinalysis improved but the improvement of arthritis was insufficient. We systemically administered a glucocorticoid, and his symptom resolved for 1 month. We confirmed that *C· trachomatis* was negative, and he had no recurrence of arthritis in January 2021.

Reactive arthritis is classified as seronegative spondyloarthritis. Acute oligoarthritis develops 1–4 weeks after a previous infection. Reactive arthritis affects younger individuals 20–40 years and mostly men (ratio of men to women, 2:1 and 3:1).[1] The onset is acute compared with other seronegative types of spondyloarthritis, and the symptoms were completed within about 2 weeks. Arthritis occurs frequently in the lower limbs, and the knee joint is mostly affected.[1] Urinary tract infections (e·g·, *C· trachomatis*) and intestinal infections (e·g·, *Campylobacter jejuni*, *Salmonella enteritidis*, and *Yersinia enterocolitica*) are common causative agents, and previous urethritis or diarrhea is a diagnostic indicator.[2] In cases of chlamydial urethritis, detailed questions are important because patients do not disclose their sexual activity, and chlamydial urethritis is oligosymptomatic. It is essential to perform examination and treatment of sexually transmitted disease (STD) when patients have arthritis symptoms that need hospital visits, in order to prevent the patient from spreading the STD. Only two studies have performed FDG-PET/CT to diagnose reactive arthritis.[3,4] Enthesitis is a feature of reactive arthritis,[3] and magnetic resonance imaging (MRI) and ultrasonography are often performed to detect enthesitis. FDG-PET/CT is more sensitive than MRI and the findings obtained are not affected by its technique compared with ultrasonography findings. FDG-PET/CT is expensive but useful for diagnosing difficult cases of reactive arthritis.

Contributors

All authors managed the patient. YH, KS, and MI wrote the report. Written consent to publication was obtained.

Conflict of interest statement

None of the authors have any conflicts of interest.

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Figure Legends

Figure 1: Fluorodeoxy glucose-positron emission tomography . Abnormal accumulation at the affected joints and enthesitis of the left shoulder joint (arrow)