Fever of Unknown Origin

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Fever of unknown origin (FUO) is a challenging problem for the clinician despite recent advances in diagnostic tools and techniques. FUO is defined as temperature > 38.3˚C on several occasions and lasting longer than 3 weeks, with a diagnosis that remains uncertain after 1 week of investigations in hospital[1]. The history, physical examination, and imaging studies are key to making a diagnosis. We describe a female patient with FUO whose diagnosis, after 4 weeks of fever, ultimately was revealed by innovative imaging studies.

A 60-year-old woman presented with a 10-day history of constant fever, extreme fatigue, malaise, anorexia, and weight loss. On examination she had a temperature of 38.7˚C. No further abnormalities were found. Laboratory evaluation revealed erythrocyte sedimentation rate (ESR) of 127 mm/h and C-reactive protein (CRP) 207.1 mg/l. White blood cell count was normal. Antinuclear antibodies and anti-double-stranded DNA antibodies could not be detected. Repeat cultures of blood, urine and feces, serologic testing for syphilis, and a tuberculin skin test were negative. A computed tomography scan of thorax and abdomen showed no abscesses, lymphoma, or other cause for the fever. A temporal artery biopsy was negative for giant-cell arteritis. During the 3-week investigation period she remained continuously febrile, with temperatures to 39.2˚C.

Ultimately, a whole-body [^{18}F]fluorodeoxyglucose-positron emission tomography-computed tomography (PET-CT) scan revealed increased uptake of labeled deoxyglucose in the aortic wall, both carotid, subclavian, and iliac arteries

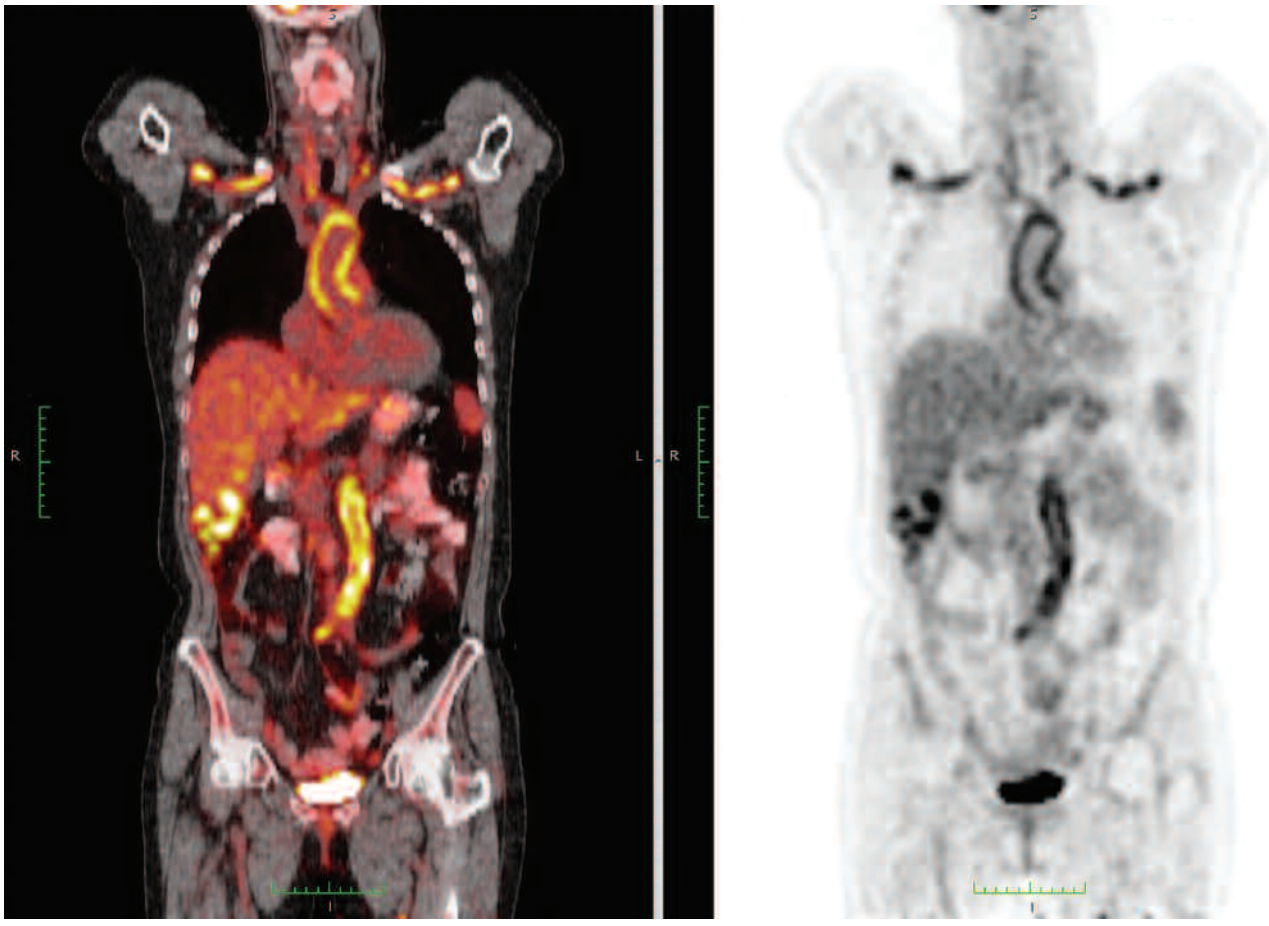

Figure 1. [^{18}F]fluorodeoxyglucose-PET-CT scan reveals increased uptake of labeled deoxyglucose in the aortic wall, both carotid, subclavian, and iliac arteries.

in keeping with Takayasu's arteritis (Figure 1). This rare large-vessel vasculitis of unknown etiology (incidence 2.6 per million in North America[2]) primarily affects the aorta and its main branches as well as the coronary and pulmonary arteries; it is often difficult to diagnose. Due to the nonspecific expression of the symptoms diagnosis is often delayed until the irreversible late occlusive stage[3]. New imaging techniques, such as [^{18}F]FDG-PET, offer promising results in diagnosing Takayasu's arteritis earlier in the disease course[4].

As no bruits or diminished pulsations of the brachial arteries were present, our patient was considered to be in the so-called "pre-pulseless phase" consistent with early disease. She was treated with prednisone 60 mg once daily and is recovering well. After 2 and 3 weeks of treatment the ESR diminished to 51 mm/h and 28 mm/h, respectively, while the CRP was 53.3 mg/l and 15.2 mg/l, respectively. This case illustrates the value of a [^{18}F]fluorodeoxyglucose-PET-CT scan in the diagnostic investigation of fever of unknown origin.

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