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CASE REPORT

PET-CT findings in large vessel vasculitis presenting as FUO, a case report

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Abstract There are increasing data demonstrating the role of flourodeoxyglucose positron emission tomography with computerized tomography fusion (^{18}FDG PET-CT) in the diagnosis of large vessel vasculitides, including Takayasu arteritis and giant cell arteritis (Hara et al. 1999; Blockmans et al. 1999; Turlakow et al. 2001]. We report a case of large vessel giant cell arteritis involving the major branches of the aorta as detected on ^{18}FDG PET-CT. A 56-year-old woman returning to the USA after visiting her native Iraq presented to our rheumatology department with fever of unknown origin (FUO) of 2-month duration, night sweats, and arthralgias. The patient did not have claudication; systolic blood pressure measurements demonstrated a 20-mmHg difference between her arms. Infectious disease, malignancy, and collagen vascular disease workup was unrevealing. Temporal artery and bone marrow biopsies were negative. To exclude FUO of malignancy, ^{18}FDG PET-CT imaging was performed. The images demonstrated significant ^{18}FDG uptake (indicating increased metabolic activity) in a circumferential fashion along the aorta and its major braches, including the carotid, subclavian, and common iliac arteries. Contrast-enhanced CT imaging demonstrated wall thickening involving these vessels along with left subclavian vein thrombosis and findings consistent with superficial thrombophlebitis involving the right forearm, wrist, and hand. The combination of laboratory and imaging findings, including the characteristic inflammatory changes involving the large vessel walls as seen on CT, as well as the vessel wall hypermetabolism on FDG PET indicating active inflammation, resulted in the diagnosis of large vessel giant cell arteritis. The patient was treated with high-dose corticosteroids followed by a course of Immuran. Her symptoms resolved and a follow-up FDG PET-CT showed complete resolution of the large vessel hypermetabolism. ^{18}F-FDG PET-CT can be a useful and noninvasive tool in diagnostic evaluation of FUO by excluding a malignant etiology and providing unexpected information that aids in correct diagnosis.

Keywords Fever of unknown origin · FDG PET · FUO · Giant cell arteritis · Large vessel vasculitis · PET-CT

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There is a growing body of evidence demonstrating the role of flourodeoxyglucose positron emission tomography with computerized tomography fusion (^{18}FDG PET-CT) in the diagnosis of large vessel vasculitides, including Takayasu arteritis and giant cell arteritis [1–3]. We report a case of large vessel giant cell arteritis involving the major branches of the aorta as detected on ^{18}FDG PET-CT.

A 56-year-old woman returning to the USA after spending 2 months in her native Iraq was referred to the rheumatology department at our institution with a 2-month history of fever of unknown origin (FUO), night sweats, and arthralgias. The patient did not experience symptoms of claudication; systolic blood pressure measurements

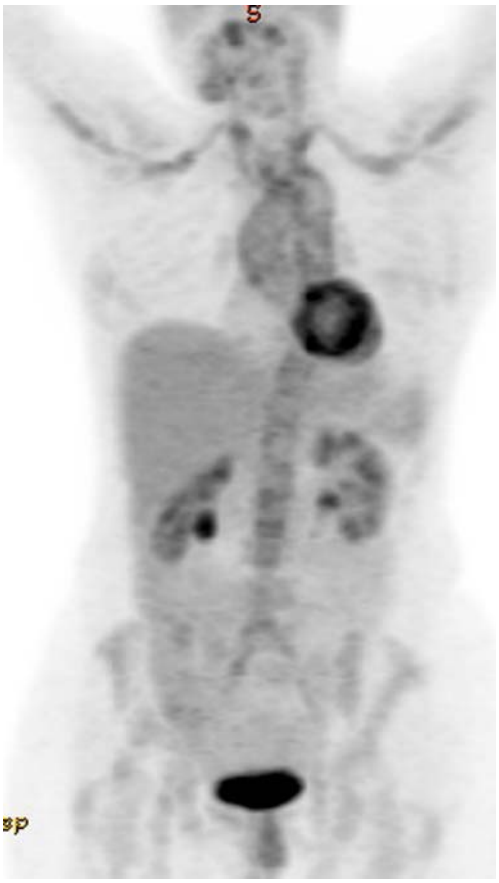

Fig. 1 ^{18}FDG PET-CT obtained at presentation demonstrates ^{18}F-FDG uptake along the large vessel walls including the carotid, subclavian, and common iliac vessels as well as the entire aorta

demonstrated a 20-mmHg differential between her arms. Extensive workup for various infectious disease etiologies, inflammatory, neoplastic, and collagen vascular diseases was unrevealing. Temporal artery and bone marrow biopsies were negative. To further investigate the etiology of the FUO and to exclude FUO of malignancy, ^{18}FDG PET-CT imaging was performed. The images demonstrated significant ^{18}FDG uptake (indicating increase in metabolic activity) in a circumferential fashion along the aorta and all of its major branches. Hypermeatabolism was seen along the vessels from the cervical to the pelvic level, including the bilateral carotid, subclavian, and common iliac arteries (Figs. 1 and 2). Further CT imaging with iodinated contrast enhancement demonstrated concentric thickening along the walls of the large vessels as well as left subclavian vein thrombosis and findings consistent with superficial thrombophlebitis involving the right forearm, wrist, and hand. The patient was referred to another major research facility

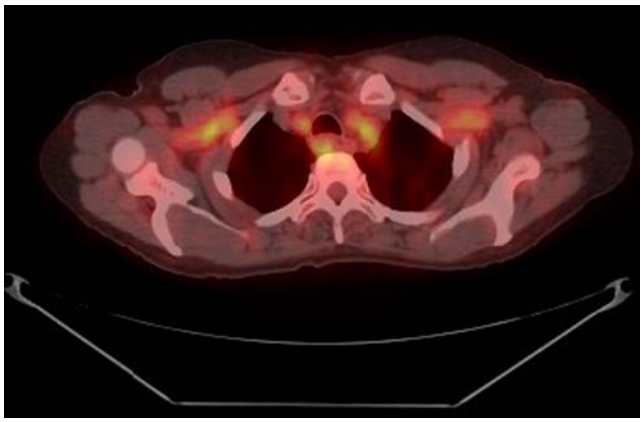

Fig. 2 ^{18}FDG PET-CT fusion images at presentation demonstrate intense hypermetabolism along the brachiocephalic arteries and subclavian arteries

for diagnostic confirmation. The combination of laboratory and imaging findings, including the characteristic inflammatory changes involving the venous and arterial circulation, as well as the avid ^{18}F-FDG uptake indicating intense hypermetabolism which is associated with active inflammation, determined the final diagnosis to be compatible with large vessel giant cell arteritis. The patient was treated with a regimen of high-dose corticosteroid (1 mg/kg) followed by a course of Immuran, as the prednisone was tapered. The patient's symptoms resolved. A follow-up FDG PET-CT scan performed 4 months later showed complete resolution of the large vessel hypermetabolism, indicating complete response to treatment.

This case report supports the role of ^{18}F-FDG PET-CT as a useful and noninvasive tool in diagnostic evaluation of FUO by excluding a malignant etiology and providing unexpected information that aids in correct diagnosis.

Disclosures None.

References

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