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Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography Hypermetabolism of Vertebral Arteries Revealing Giant Cell Arteritis

To the Editor:

Giant cell arteritis (GCA) is a granulomatous vasculitis predominantly involving the branches of the external carotid artery. Cranial manifestations such as headache, jaw claudication, scalp tenderness, and visual loss associated with fever, weakness, and weight loss are the major complaints. However, GCA can also involve large vessels such as the aorta and upper/lower limb arteries.[1] We report the first case of GCA revealed by clinically unsuspected vertebral arteries hypermetabolism on fluorine-18 fluorodeoxyglucose positron emission tomography/computed tomography (^{18}F-FDG PET/CT).

An 85-year-old man was admitted for generalized weakness, anorexia, and weight loss. His medical history included chronic arterial hypertension, ischemic heart disease, aortic and mitral bioprosthesis, and atrial fibrillation. He was a former smoker. He was treated with clopidogrel, fluindione, ramipril, furosemide, diltiazem, and esomeprazole. Physical examination revealed irregular heart rhythm without signs of cardiac failure, valvular murmur, or fever. Temporal arteries were not enlarged or tender. Biological

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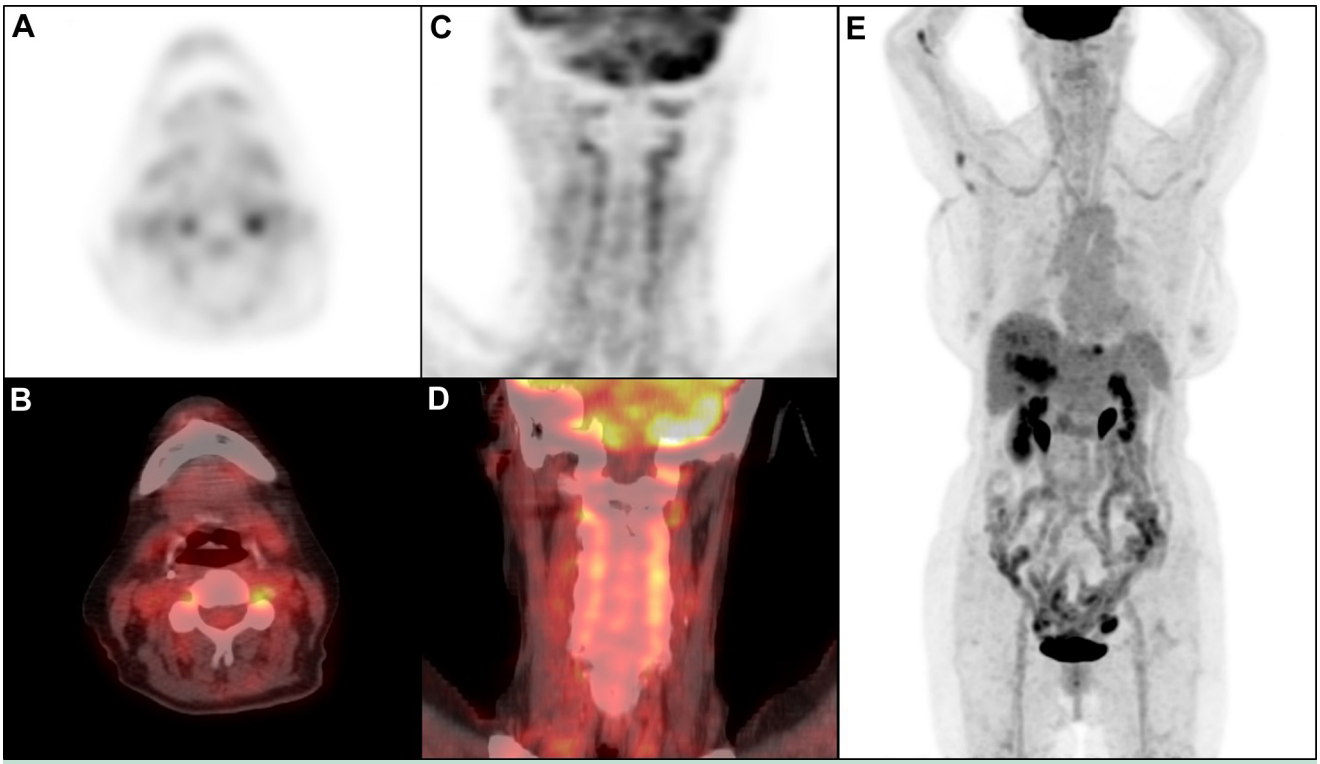

Figure Positive fluorine-18 fluorodeoxyglucose (^{18}FDG) positron emission tomography/computed tomography (PET/CT) showing hypermetabolism activity in vertebral and subclavian arteries, with a maximum standard uptake value (SUV max) of 4.5 (liver SUV max = 3.5), ratio = 1.28. (**A**) Axial ^{18}F-FDG PET. (**B**) Fused ^{18}FDG PET/CT in axial slice. (**C**) Anterior ^{18}F-FDG PET. (**D, E**) Fused ^{18}F-FDG PET/CT in anterior slice (**D**) and maximum intensity projection (**E**).

evaluation showed fibrinogen at 6.85 g/L (normal <4), C-reactive protein at 26.7 mg/L (normal <10), and white blood cell count at 10×10^9/L (neutrophils 7.94×10^9/L). Results of renal and liver function tests were within normal limits. Repeated blood cultures, urine test, serology tests for bacteria and viruses, and sputum cultures for bacteria and *Mycobacterium tuberculosis* were negative. Transesophageal echocardiography revealed left ventricle hypertrophy with normal left ventricular function and no sign of endocarditis. Results of a chest–abdomen–pelvis CT scan and pulmonary function tests were normal. The search for rheumatoid factor and antinuclear antibodies came up negative. Finally, ^{18}F-FDG PET/CT showed a high uptake in vertebral arteries (**Figure**), without hemodynamic consequences or atheroma on ultrasound Doppler. The combination of metabolic activity on vertebral arteries, general status alteration, and biological inflammation occurring in a patient aged >50 years suggested the diagnosis of GCA, despite the absence of temporal signs. Histopathologic analysis of a temporal artery biopsy gave typical results of GCA. Clinical outcome was favorable on prednisolone (0.7 mg/kg/d). The prednisolone dose was tapered. No additional symptom developed, and C-reactive protein remained in the normal range after 10 months of follow-up.

To our knowledge, this is the first reported case of GCA revealed by asymptomatic involvement of vertebral arteries without signs of aortitis. This disease involves the vertebral and carotid arteries in their extracranial location. The reason the intracranial or intradural segments of these arteries are rarely involved is that the elastic fibers in the media and adventitia—the target of the inflammatory response—are sharply reduced. Although rare, vertebral artery inflammation leading to stroke is a well-established and life-threatening complication. Compared with atherosclerosis-related stroke, the vertebrobasilar territory is more commonly affected in GCA.[2,3] In a series of 287 patients,[2] 8 patients (2.8%) had strokes: 7 occurred in the vertebro-basilar circulation, compared with 1 in the carotid territory, and in most cases stroke occurred after the onset of corticosteroid therapy. In another series of 57 patients,[3] 7.0% experienced a vasculitis-related stroke, and the stroke was vertebrobasilar for 3 of 4 patients. In our series of 35 patients with GCA and aortitis,[1] vertebral artery involvement on ^{18}F-FDG PET/CT was found in 2, with no stroke. Our observation highlights that vertebral vasculitis can be an early and isolated finding in GCA. Rapid diagnosis and concomitant clopidogrel and fluindione therapy probably prevented stroke. This observation also recalls that ^{18}F-FDG PET/CT may provide critical information for early diagnosis and extent of disease activity.

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