ABSTRACT
An 80-year-old man presented with new-onset pain in the shoulders and lower extremities and elevated serum inflammatory markers. A clinical diagnosis of polymyalgia rheumatica (PMR) was made, but there was a suboptimal response to glucocorticoid therapy, prompting further evaluation. 18F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) revealed intense FDG uptake in the arteries of the bilateral lower extremities, head, and neck, but sparing the aorta, suggestive of an uncommon pattern of giant cell arteritis (GCA). There were also imaging signs consistent with PMR, including FDG uptake in the synovium of large joints. This case highlights the uncommon manifestation of GCA with lower extremity involvement and sparing of the aorta. The combination of FDG PET imaging features and elevated serum markers obviated the need for invasive biopsy. One might also conclude that standard FDG PET/CT imaging protocols covering orbits/vertex to thighs incompletely evaluate the extent of arterial distribution of GCA.

Keywords: Diagnosis, diagnostic imaging, giant cell arteritis, polymyalgia rheumatica, rheumatic diseases, vasculitis

INTRODUCTION
This case demonstrates the uncommon presentation of lower extremity giant cell arteritis (GCA) seen on fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) with sparing of the aorta in association with polymyalgia rheumatica (PMR). Symptomatic GCA involving the lower extremity arteries has been sparingly described in clinical rheumatological literature with an overall prevalence of <1% and is considered to be clinically underestimated.[1] To our knowledge, there is only one case describing a similar FDG PET/CT appearance, however, that case was described in the context of generalized vasculitis without specific diagnosis of GCA or PMR.

CASE REPORT
An 80-year-old man presented with a new onset of muscular pain in shoulders and bilateral lower extremities, particularly his thighs and shins, frontal headache, occasional blurring of vision, and fatigue. He denied symptoms of jaw, leg, or arm claudication, fever, and weight loss. Family history was positive for GCA in his mother. Laboratory tests revealed elevated erythrocyte sedimentation rate (ESR) of 77 mm/h (normal, 3–28 mm/h) and serum C-reactive protein (CRP) of 191

Ananya Panda1, Gregory A. Wiseman1, Matthew J. Koster2, Kenneth J. Warrington2, Geoffrey B. Johnson1,3
Departments of 1Radiology, 2Rheumatology and 3Immunology, Mayo Clinic, Rochester, MN, USA
Address for correspondence: Dr. Geoffrey B. Johnson, Department of Radiology, 100 2nd Street SW, Mayo Clinic, Rochester, MN-55905, USA.
E-mail: johnson.geoffrey@mayo.edu
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GCA is an idiopathic granulomatous medium- and large-vessel vasculitis that typically involves the aorta, extracranial head-and-neck arteries (most common the superficial temporal arteries), and subclavian arteries.\(^6\) GCA with lower extremity involvement is uncommon with only a few small reported case series.\(^1,3,5\) The true prevalence of GCA with lower extremity involvement is likely underestimated clinically as patients can be asymptomatic without claudicatory symptoms.\(^6\) Furthermore, many FDG PET/CT scans performed for vasculitis do not include the legs. GCA with lower extremity involvement typically involves the femorotibial arteries, followed by iliac arteries.\(^1,3,4,7\) GCA with lower extremity involvement may also be seen in patients with PMR.\(^6\) Whole-body FDG PET imaging can play an important role in early detection of lower extremity arterial involvement in asymptomatic patients. Early diagnosis of lower extremity arterial involvement and conveying this information to rheumatologists is important for rapid initiation of immunosuppressant therapy to avoid critical limb ischemia.\(^6\) Whole-body FDG PET provides a one-stop-shop for detection of the extent of active vasculitis as well as concomitant manifestations of PMR.\(^6\) Moreover, the wider availability of digital PET/CT scanners with more sensitive silicon photomultiplier tubes has the potential to further increase the detection of lower extremity arterial involvement. While both visual and semi-quantitative elevations based on maximum standardized uptake value have been described for the evaluation of vasculitis, visual assessment is considered more reliable and reproducible. A visual assessment of FDG uptake greater than the liver has the highest diagnostic accuracy for detection of active vasculitis and monitoring response to therapy.\(^6\) Both FDG uptakes similar to the liver and greater than the liver indicate active vasculitis, while FDG uptake less than the liver or similar to blood pool activity suggests favorable response after therapy on follow-up.\(^9\) The overall sensitivity of FDG PET/CT for diagnosis of vasculitis also increases with elevated serum inflammatory markers and in patients who are glucocorticoid naïve or have glucocorticoid therapy tapered before imaging.\(^9\) Atherosclerotic inflammation is another common cause of FDG uptake in lower extremities but is typically patchy with uptake less than liver, unlike the segmental uptake in GCA.\(^9\) Takayasu arteritis is another large-vessel arteritis but is seen in middle-aged women <50 years, with involvement of aorta and great vessels.\(^9\) The combination of
clinical history (age >50 years) PMR, elevated serum markers, and superficial temporal artery involvement was quite diagnostic of GCA in this case despite the sparing of aorta and lower extremity involvement. Thus, recognition of FDG PET imaging features of GCA and PMR can obviate the need for invasive biopsy and guide appropriate immunotherapy.

Exception for five authors
We sincerely request five authors to be listed for this submission as the patient was jointly managed by two rheumatologists, and it was crucial to have both of their inputs on the case. They provided the necessary case history and the clinical context for the discussion. All five authors contributed equally to the manuscript writing and approved the final draft.

Declaration of patient consent
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest
There are no conflicts of interest.

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