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**CARDIOVASCULAR FLASHLIGHT**

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**Fully integrated whole-body [¹⁸F]-fludeoxyglucose positron emission tomography/magnetic resonance imaging in therapy monitoring of giant cell arteritis**

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A 68-year-old man with giant cell arteritis (GCA) was admitted to our hospital 1 year after diagnosis for reevaluation of disease status. Initially increased inflammatory biomarkers C-reactive protein (7.2 mg/dL; norm, <0.5 mg/dL) and blood sedimentation rate (80 mm/h; norm, <30 mm/h) disappeared within a few months during glucocorticoid treatment, which has been reduced to 5 mg/day as maintenance therapy. Due to slightly elevated C-reactive protein (0.8 mg/dL) suggesting low activity of GCA, [¹⁸F]-fludeoxyglucose ([¹⁸F]-FDG) positron emission tomography/magnetic resonance imaging (PET/MRI) was performed to identify activity and extent of suspected recurrent vasculitis. Positron emission tomography revealed extensive large vessel involvement with marked FDG vessel wall uptake in the aorta and its branches, indicative for active inflammation (Panel A: coronal PET, Panel D: fusion of PET and T2 STIR). Magnetic resonance imaging, however, did not show any vessel changes suggestive for active vasculitis (Panel E: axial T1 VIBE, Panel F: angiography). After changing the therapeutic regimen by adding methotrexate to ongoing glucocorticoid therapy, FDG vessel wall uptake decreased significantly and remained normal in 12- and 24-month follow-up PET/MRI studies (Panels B and C). Simultaneously, C-reactive protein disappeared and remained undetectable in further laboratory tests suggesting remission of GCA. This case emphasizes the important role of molecular imaging by PET in therapy monitoring of GCA, since biochemical evaluation of disease activity by C-reactive protein completely underestimated disease flare. Hybrid PET/MRI might be a useful approach for aiding in the management of GCA, given its high sensitivity based on PET and the reduced radiation exposure compared with well-established PET/CT.

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