Clinical Vignette

Rheumatology 2017;0:1
doi:10.1093/rheumatology/kex243

Large-vessel vasculitis in positron emission tomography and ultrasound fusion imaging

A 65-year-old female was referred with loss of weight, dyspnoea and night sweats. Laboratory tests revealed elevated inflammatory markers. Imaging with ^{18}F-labelled fluorodeoxyglucose (^{18}F-FDG) positron emission tomography/computed tomography (PET/CT) showed increased ^{18}F-FDG-uptake in the axillary arteries and the aorta (Fig. 1A, blue and green arrows). Large-vessel vasculitis was suspected, given the high specificity (89%) and sensitivity (80%) of PET/CT for this diagnosis [1]. The limited soft-tissue contrast of CT images impedes a detailed assessment of morphological vascular pathologies. These can be better examined using US, which depicts vascular wall thickening as a sign of inflammatory processes (Fig. 1B, blue arrow).

PET/US fusion was performed, combining the advantages of metabolic (PET) and morphological (US) examinations [2]. The Volume Navigation technology of GE Healthcare's LOGIQ^{TM} E9 US device allows the merging of previously acquired PET datasets with real-time US. Figure 1C shows the accurate correlation of PET and US images in the left-sided axillary artery. Additional Doppler sonography was applied to assess the perfused vessel lumen (Fig. 1D). Sagittal images of PET, CT and US in Fig. 1E–G demonstrate the co-registration of PET and US images, using spine and liver as morphological landmarks. The increased ^{18}F-FDG-uptake correlates with the pathologically thickened wall of the abdominal aorta (Fig. 1E–G, green arrows and videos of transversal and sagittal PET/US fusion imaging of the abdomen, available as supplementary data at *Rheumatology* Online).

Funding: No specific funding was received from any funding bodies in the public, commercial or not-for-profit sectors to carry out the work described in this manuscript.

Disclosure statement: The authors have declared no conflicts of interest.

Supplementary data

Supplementary data are available at Rheumatology Online.

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Fig. 1 PET/CT/US fusion images of axillary artery and abdominal aorta in large-vessel vasculitis