INVITED COMMENTARY

Ruling in or Ruling out Suspected Vascular Graft Infection: Go Nuclear or Go Home?

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In a comprehensive retrospective study comparing two nuclear medicine imaging modalities to diagnose prosthetic vascular graft infection (PVGI), Puges et al.[1] elegantly demonstrated in 39 patients that a white blood cell (WBC) scan is more accurate than ^{18}F-FDG positron emission tomography integrated with computed tomography (PET-CT), with fewer false positive and false negative examinations, particularly in the difficult setting of a thrombosed graft where PET-CT could be misleading. Interestingly, they described three patients where the use of nuclear medicine could have allowed an earlier diagnosis: two aorto-iliac bypasses and one femoropopliteal graft with normal initial CT angiography (CTA) and positive WBC scan and PET-CT. These results are completely on a par with the ones published just a few months ago by Folmer et al.[2]

PVGI is a dreaded complication and a challenging diagnosis with either an acute or a delayed presentation.[3] In cases of suspected PVGI in the immediate post-operative period, CTA is the key imaging modality, demonstrating abnormal and rapidly progressive graft collections; nuclear medicine has seldom been evaluated in the acute setting[4] and is most likely to be subject to false positives. On the contrary, when a delayed PVGI is suspected, CTA is often lacking, as demonstrated in the present paper where four CTA examinations were falsely normal out of the 15 confirmed PVGI cases.[1] This is confirmed by the meta-analysis of Folmer et al.:[2] a negative CTA cannot confidently rule out a (chronic) PVGI. Consequently, the relatively low negative predictive value of CTA (87.2%) commands the addition of a nuclear medicine test, ideally a WBC scan, whenever PVGI is suspected and CTA remains normal. But what should we do when CTA is positive for graft infection? Indeed, Puges et al.[1] report two false positive CT examinations (one haematoma and one false aneurysm). So should we also confirm any positive CTA with a nuclear medicine test? If so, why not be pragmatic, and a bit provocative, and skip CTA and go directly to nuclear medicine whenever a PVGI is suspected?

It appears that apart from invaluable anatomical information about the graft patency, the anastomoses and the graft surroundings, CTA can properly diagnose PVGI, given the right signs are present. However, these signs and their (pathognomonic) value are not well described yet, and future studies should help us to better understand the right place of CTA and WBC/PET-CT in this context.

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