CLINICAL INDICATIONS AND USEFULNESS OF FDG PET IMAGING IN VASCULITIS

BACKGROUND

FDG PET CT is variably used in the clinical setting of large vessel vasculitis within NHS Scotland. There is no current consensus on best use of this technology in this scenario within the Scottish PET centers. It was noted that NHS England, in its expansion plan includes this indication for PET CT investigation, which is also recommended by the joint document produced by RCR, RCP, BNMS, ARSAC. It was agreed in the recent SCIN PET CT ROI group meeting, that a subgroup would be set up to review the practice and available literature evidence.

METHODS

Review of literature available on PUBMED database using following keywords: FDG, PET, vasculitis.

SUMMARY

The outcome of many of the published articles is quite positive about the utility of PET CT in suspected large vessel vasculitis. It is argued that sensitivity of PET CT is not very high but evidence from meta-analysis suggests it seems to offer better chance of diagnosis (sensitivity around 90%) in large vessel vasculitis than temporal artery biopsy (30%). It is worth noting that the specificity of this test reaches up to 98 percent. In this background, we should be aware that undiagnosed and untreated patients are very likely to develop complications at a later stage. Low sensitivity and specificity results in some studies is frequently attributed to the mostly retrospective nature of the studies, variable stages of disease in the patients, patients already on steroid treatments etc, resulting in underestimation of the value/accuracy of the test. The other difficulty has been the lack of gold standard test for a confident comparison. Invasive angiogram, biopsy which are often quoted as the "apparent gold standard" are invasive and have even lower sensitivity and specificity, making FDG PET as a non-invasive and sensible choice. Allowing for recognized limitations, the test is quoted in several papers to show good diagnostic accuracy in this condition.

RECOMMENDATIONS

We would advise adopting the recommendation, with minor amendments, in the paper "Evidence based indications for the use of PET-CT in the UK 2016", as below:
1. Evaluation of suspected large vessel vasculitis in selected cases; for example, to determine the extent and distribution of the disease activity or to exclude underlying malignancy which may be a paraneoplastic phenomenon where recent conventional imaging has been unhelpful resulting in atypical presentations of vasculitis.

2. PET-CT would not be indicated in all patients with giant cell arteritis but is of use in patients where conventional investigations are unhelpful and treatment would be altered if ongoing inflammatory disease is confirmed. It should not be routinely used to assess disease response monitoring unless there is a specific exceptional need in an individual patient.

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SAMPLE REFERENCES:

1. The Role of 18F-FDG PET/CT in Large vessel vasculitis: Appropriateness of current classification criteria?
   H Balink, RJ Bennink, BLF van Eck-Smit, HJ Verbern

   NHS England

3. Large vessel vasculitis: Interobserver agreement and diagnostic accuracy of 18F- FDG PETCT
   KDF Lensen, EFI Comans et al

4. Diagnostic accuracy of 18F-FDG PET or PET/CT for large vessel vasculitis. A meta-analysis
   YH Lee, SJ Choi, JD Ji, GG Song

5. Evidence based indications for the use of PET-CT in the UK 2016

6. 18F-FDG uptake in main arterial branches of patients with large vessel vasculitis: visual and semiquantitative analysis
   M Castellani, M Vadrucci et al

7. Management of large vessel vasculitis with FDG-PET: A systematic literature review and meta-analysis
   M Soussan, P Nicolas et al

8. The prognostic value of baseline 18F-FDG PET/CT in steroid naive large vessel vasculitis: introduction of volume based parameters
   L Dellavedova, M Carletto et al