SCOTTISH GUIDELINES ON THE USE OF PET/CT SCANNING IN THE MANAGEMENT OF PATIENTS WITH LYMPHOMA.

1. Guidance on the use of PET/CT scanning in patients with lymphoma was issued by SEHD in 2008 following the publication of revised response criteria and associated guidelines on the use of PET imaging in malignant lymphoma (Cheson BD et al, 2007; Juweid ME et al, 2007). The International Working Group Guidelines have recently been revised (Cheson BD et al, 2014) and in view of this and other recent publications (see further reading) we have updated the Scottish Guidance.

2. Most lymphomas, particularly high grade lymphomas and Hodgkin lymphoma, are FDG avid. Small lymphocytic lymphoma, extranodal marginal lymphoma and skin lymphoma have variable FDG avidity. There is insufficient evidence and scanning capacity to permit use of this imaging modality in the staging and assessment of response in all patients with lymphoma. We have therefore limited our current recommendations to the use of PET/CT in the three main subtypes, Hodgkin lymphoma (HL), diffuse large B-cell lymphoma (DLBCL) and follicular lymphoma (FL).

PET/CT reporting
3. PET/CT response should be reported according to the Deauville criteria by radiologists/Nuclear Medicine Physicians fully trained and experienced in interpreting this imaging modality. For patients with HL, a score of 1 or 2 is considered negative and a score of 4 or 5 positive. A score of 3 is interpreted according to the clinical context but in many patients will indicate a good prognosis.

Disease staging
4. PET/CT scan improves the accuracy of staging and subsequent response assessment compared to contrast CT scan. It will upstage disease in a minority of patients and may result in a change in the subsequent treatment plan. It is superior to CT scan in the identification of sites of extra nodal disease such as bone, bone marrow and liver and has replaced the need for bone marrow biopsy (BMB) in HL. Although it may replace the need for BMB in the majority of patients with DLBCL, it is not yet an established standard of care.

Interim PET
5. Interim PET/CT after 2 cycles of ABVD (iPET2) is predictive of outcome in patients with advanced HL who continue on ABVD, although the optimal management of these iPET2 positive patients remains controversial. Interim PET/CT scan is less predictive of outcome in patients with DLBCL and the optimal timing remains unclear so is not currently recommended other than in the context of a clinical trial.
End of treatment PET

6. End of treatment (EOT) PET/CT scan has high negative (94-100%) and positive (91-92%) predictive values in patients with HL and is recommended for all patients who have not achieved iPET2 negative remission as this may influence radiotherapy planning, decisions on biopsy and strategy for follow-up. However conversion to PET negativity at EOT has no impact on prognosis in iPET2 positive patients treated with 6 cycles of ABVD.

7. In patients with DLBCL, end of treatment PET/CT scan has a high negative predictive value of 90-100% however the positive predictive value is lower and variable at 50-82% due to uptake in nodes post chemotherapy due to tissue inflammation and remodelling. Routine EOT PET/CT is not always necessary particularly in patients with a radiological CR using CT. If CT identifies residual nodes or tissue mass then PET/CT may be useful. PET avid sites should be considered for biopsy to confirm residual disease or alternatively an interval scan after 3 months (if clinically suspicion of relapse is low) is appropriate.

8. In patients with follicular lymphoma PET/CT is recommended for patients with apparent stage I or II disease on who are being considered for curative radiotherapy. PET will identify more advanced disease in up 60% of patients. In patients with obvious advanced stage disease PET/CT is unlikely to influence management and is not recommended. Finally, PET/CT has no currently established role in response assessment for follicular lymphoma.

Pre transplant assessment

9. Complete metabolic remission after salvage therapy prior to autologous transplant is highly predictive of outcome in patients with relapsed/refractory HL. Persistent PET positivity in HL patients treated with salvage therapy is associated with a higher risk of relapse following autologous transplant. Allogeneic transplant may be the preferred option in such patients.
Recommendations for PET/CT scan
In general, PET/CT scans should only be performed if likely to influence management

Hodgkin lymphoma
  1) Staging - where clinically feasible.
  2) After 2 cycles of ABVD (iPET2) in patients with advanced stage HL – desirable, not mandatory.
  3) End of treatment if iPET2 negative remission not achieved.
  4) In early stage HL after 3-4 cycles of ABVD in order to offer the potential of avoiding radiotherapy in young people, as per RAPID study.
  5) Staging at relapse
  6) Post salvage therapy and prior to autologous transplantation.

Diffuse large B-cell lymphoma
  1) Staging - where clinically feasible.
  2) End of treatment - not routinely recommended
  3) Staging at relapse
  4) Post salvage therapy and prior to autologous transplantation

Follicular lymphoma
  1) Recommended for patients with apparent stage I or II disease on CT scan who are being considered for curative radiotherapy.

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Further reading


