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 were revised (Cheson BD et al, 2014) and Scottish Guidance was updated in 2016. This is a further update reflecting changes in clinical practice following BSH guidance and clinical trial results.

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 1-3 is considered negative and represents a complete metabolic response. A score of 4 or 5 is positive. However, in trials where de-escalation is based on PET response, a score of 3 may be considered an inadequate response to avoid under treatment.

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 after 2 cycles of escalated BEACOPP is predictive of outcome in patients with advanced HL. 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. EOT PET/CT is strongly recommended in BSH guidelines (2016) although 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 who are being considered for curative radiotherapy. PET will identify more advanced disease in up to 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 and DLBCL. Persistent PET positivity in 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 - all patients treated with curative intent should get a baseline PET/CT scan.
2) After 2 cycles of ABVD or 2 cycles of escalated BEACOPP/BEACOPPDac (iPET2) in patients with advanced stage HL – recommended if result will alter management, either escalation or de-escalation of treatment.
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 (including Burkitt’s lymphoma)

1) Staging - where clinically feasible.
2) End of treatment – recommended, especially for further assessment of residual masses on CT scan.
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.

Other FDG avid lymphomas

Consider PET/CT scan if this would alter management.

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NOTE
This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient’s case notes at the time the relevant decision is taken.
Further reading


