

# Discrepancies and priorities in staging and restaging malignant lymphoma by SPET, SPET/CT, PET/CT and PET/MRI

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**Keywords:** HL - NHLymphoma  
- Staging - Restaging  
- SPET/CT - PET/CT

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*Received:*

24 June 2013

*Accepted revised:*

24 July 2013

## **Abstract**

Due to the rapid development of modern imaging methods and also of medical oncology, there has been a significant progress in diagnosis and treatment of malignant lymphomas in the last few years. Nuclear medicine (NM) imaging methods gained new perspectives via the so called hybrid technologies—single-photon emission tomography combined with computed tomography (SPET/CT), positron emission tomography combined with computed tomography (PET/CT) and recently even positron emission tomography combined with magnetic resonance imaging (PET/MRI), which have led to a better image quality and diagnostic findings. Since SPET/CT evolved later than the "gold standard"  $^{18}\text{F}$ -FDG-PET/CT in lymphoma diagnostics, there are fewer studies with it, but it seems to be an excellent alternative to PET/CT. The role of PET/CT is confirmed up-to-date for typically  $^{18}\text{F}$ -FDG-avid lymphomas, in staging and restaging diffuse large B-cell and some aggressive follicular lymphomas, in a suspected relapse of treatment of both Hodgkin's and non-Hodgkin's lymphomas. There are many discussions about the "interim-PET" but the recent results indicate its important prognostic role for predicting disease-free survival and the possibility to modify treatment intensity in order to reduce late side effects. On the other hand, the routine and approbated use of conventional morphologic imaging methods CT and MRI serve as a "reference standard" for the newer hybrid technologies not only in diagnostics but also in the cost-benefit ratio analysis and remain the basic imaging modalities when hybrid methods are not available. *In conclusion*, our review points at the main advantages and disadvantages of each NM method mentioned above in the diagnosis and follow-up of malignant lymphomas. Specifically, problems in differential diagnostics and further possibilities to better optimize the diagnostic and therapeutic algorithm are mentioned.

*Hell J Nucl Med* 2013; 16(3): 223-229    *Epub ahead of print:* 18 October 2013    *Published on line:* 28 November 2013