

2-deoxy-2-[¹⁸F]FDG PET Imaging for Therapy Assessment in Hodgkin's and Non-Hodgkin Lymphomas



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KEYWORDS

• PET • Lymphoma • Therapy • Assessment • Hodgkin • DLBCL • Adapted

KEY POINTS

- 2-deoxy-2-[¹⁸F]fluoro-D-glucose ([¹⁸F]FDG) PET response-adapted therapy has improved outcome of patients with Hodgkin lymphoma (HL). The standard treatment of HL is the combined modality therapy including both chemotherapy and involved site radiation therapy.
- PET response-adapted therapy in HL has contributed to the reduction of the long-term treatment-related toxicity.
- Circulating tumor DNA could complement [¹⁸F]FDG PET/CT scans, enhancing therapy outcome prediction in lymphoma. This is of particular interest in cases of positive interim and/or end-of-treatment PET scans within the context of immunotherapies.

INTRODUCTION

The estimated new cases of Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL) in the United States in 2022 are 8540 and 80,470, respectively, and the estimated deaths are 920 and 20,250, respectively.¹ NHL represents a varied spectrum of lymphoproliferative disorders originating in B lymphocytes, the diffuse large B-cell lymphoma (DLBCL) being the major subtype, T lymphocytes, or natural killer cells (NK/T-cell lymphomas are very rare).^{2,3}

The 2-deoxy-2-[¹⁸F]fluoro-D-glucose ([¹⁸F]FDG) PET combined with computed tomography (PET/CT) has significantly contributed to improvement of patients' outcome. The Consensus of the International Conference on Malignant Lymphomas Imaging Working Group on the use of [¹⁸F]FDG

PET/CT for staging and response assessment and the Lugano classification, including Lugano criteria adapted to immune-based therapy (LYRIC: the lymphoma response to immunomodulatory therapy criteria), are still successfully applied both in routine clinical practice and clinical trials.⁴⁻⁸ A recent work within a panel of experts appointed by the European Association of Nuclear Medicine confirmed a consensus on most statements concerning the use of PET in NHL and HL.⁹

On the one hand, the challenges lie in enhancing the outcome of lymphoma patients, particularly those with advanced or refractory/relapsed disease. On the other hand, there is a need to prevent or minimize the long-term toxicity associated with treatments, including radiation therapy (RT).

The objective of this review article is to present contemporary data on the use of [¹⁸F]FDG PET/CT

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