

## Stage IE non-Hodgkin's thyroid lymphoma on $^{18}\text{F}$ -FDG-PET/CT

**To the Editor:** A 79 years old woman with history of hypothyroidism and breast cancer, status post bilateral segmental mastectomies and radiation treatment, presented to us with a left-sided painless thyroid nodule. Thyroid ultrasound demonstrated a hypoechoic solid-appearing left thyroid nodule suspicious for malignancy. Subsequent biopsy revealed high-grade B-cell lymphoma. Whole body PET/computed tomography (CT) was performed for initial staging which showed isolated intense uptake in the left hemithyroid and isthmus with max SUV 39.4, correlating with the high-grade histology in this patient. However, no nodal or other extranodal involvement could be identified, qualifying this as stage IE non-Hodgkin's lymphoma (Fig. 1).

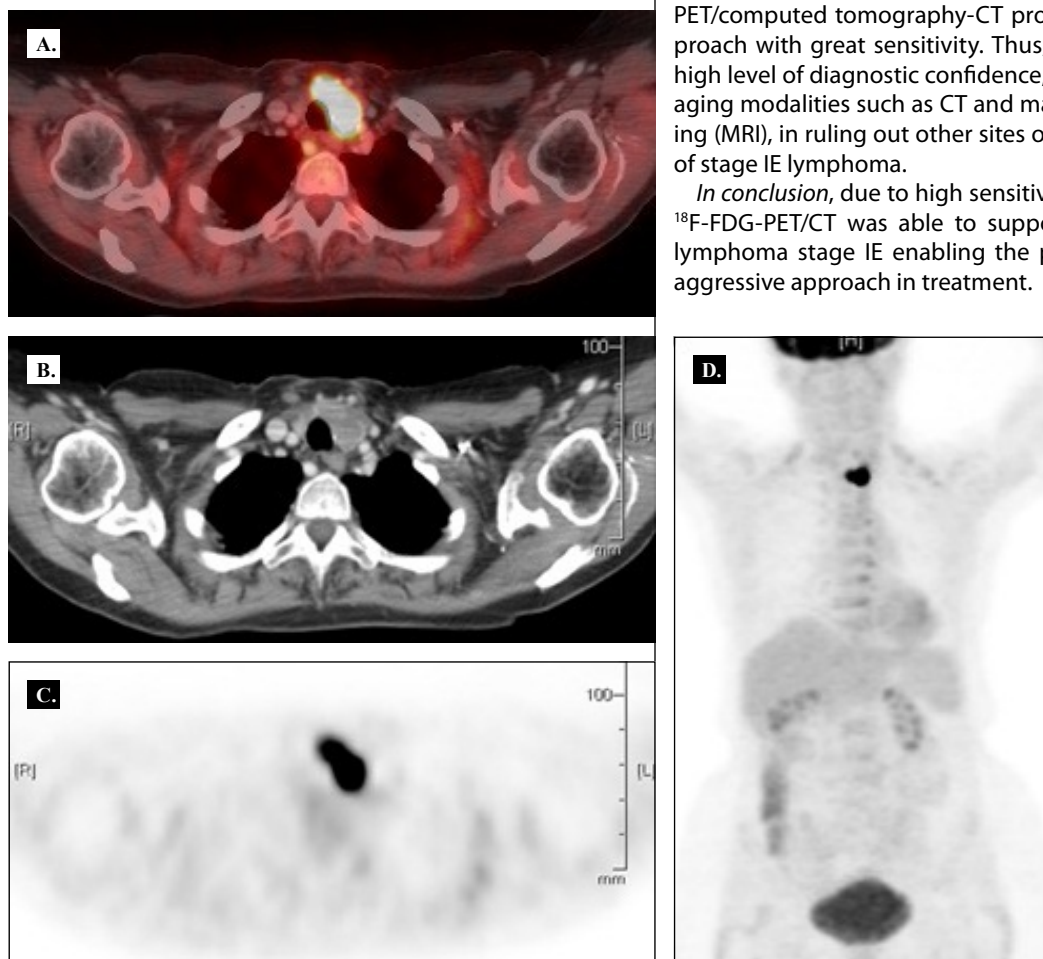
Primary non-Hodgkin's lymphoma of the thyroid is an uncommon malignancy in adults, accounting for only 2%-5% of all thyroid neoplasms and 2.5%-7% of all extranodal lymphomas [1-4]. These lymphomas tend to arise in middle-aged and elderly women, ages 50 to 80 with a peak incidence at 60 years of age [5, 6]. They typically (94%) occur in the setting of lymphocytic thyroiditis, shown to confer a

40 to 80 times risk relative to that of the general population [3, 6-8]. Diagnosis is made by biopsy, flow cytometry, and immunohistochemistry. The vast majority of cases reveal intermediate-grade histology [4].

Stage IE is designated when lymphoma exhibits a single isolated extranodal manifestation ('E' for 'extranodal'). This accounts for approximately 50% of primary non-Hodgkin's lymphomas of the thyroid [5]. Stage IE lymphoma generally portends an excellent prognosis, with reported survival rates ranging from 76%-100% [1, 5, 6].

In the last decade, fluorine-18 fluorodesoxyglucose-positron emission tomography ( $^{18}\text{F}$ -FDG-PET) has emerged as a major advance in the detection of disease activity and the diagnosis of lymphomas. Further, its specific value in cases of primary thyroid lymphoma has recently been demonstrated, both in diagnosis and in monitoring of treatment response [9, 10]. Accurate staging of non-Hodgkin's lymphoma has a drastic impact on prognosis as well as treatment strategy, which can range from surgical excision to chemotherapy and radiation. In the case of newly found thyroid lymphoma, PET/computed tomography-CT provides a whole-body approach with great sensitivity. Thus, this modality confers a high level of diagnostic confidence, superior to regional imaging modalities such as CT and magnetic resonance imaging (MRI), in ruling out other sites of malignancy in the case of stage IE lymphoma.

*In conclusion*, due to high sensitivity in lesional detection,  $^{18}\text{F}$ -FDG-PET/CT was able to support diagnosis of thyroid lymphoma stage IE enabling the physician towards a less aggressive approach in treatment.



**Figure 1.** (A) Axial fused PET/CT, (B) axial CT, (C) axial PET, and (D) maximum intensity projection (MIP) whole body image of the patient. PET/CT imaging definitively rules out extrathyroidal disease, confirming the rare diagnosis of stage IE lymphoma localized in the thyroid.

All authors declare that they have no conflicts of interest

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