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EDITORIAL

Exploring the value of sentinel lymph node PET/CT detection in thyroid carcinoma

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Sentinel lymph node (SLN) is the first lymphatic station that drains from the primary tumor, and SLN biopsy is a standard procedure in solid cancers providing diagnostic and prognostic information [1, 2]. Despite SLN biopsy is not commonly used in thyroid cancer, the basis for its use is to detect lymph node occult metastases. The presence of lymph node metastases guides the therapeutic choice, mainly in differentiated thyroid cancer (DTC) that commonly spreads by lymphatic via [3]. Lymph node metastasis is a relatively common occurrence in DTC, and it is associated with an increased risk of recurrence [3, 4]. The presence of lymph node metastasis influences the choice of administration of adjuvant radioactive iodine (RAI) therapy. The DTC prognosis is usually good with over 90% of 10-year survival rate [4, 5]. Accurate staging of lymph node involvement is essential for determining the appropriate surgical approach and selecting patients who may benefit from RAI therapy. Recently prophylactic central neck dissection in clinically node-negative DTC has been extensively debated [6–8].

On the other hand, medullary thyroid cancer (MTC) originates from thyroid parafollicular C-cells and represents less than 5% of all thyroid cancers [9, 10]. Progression of the disease is usually slow, with long life expectancy even in the presence of persistent disease and in the absence of treatment. Neck surgery followed by external radiotherapy is the standard treatment [9, 10]. Therefore, in thyroid cancer, defining lymph node involvement is crucial for assessing patients' prognosis [1–6].

Preoperative evaluation of neck lymph node status is usually based on imaging, mostly neck ultrasound, which represents the first level investigation in evaluation lymph node compartments of the neck [4, 11, 13]. The ultrasound SLN mapping allows for precise evaluation of the lymphatic spread, and it plays an important role in the staging disease. This approach can help avoid unnecessary comprehensive neck dissection and ensure an appropriate treatment [11–13].

In this background, we read a recent and interesting article by L. De Vries et al. [14]. The aim of her study was to demonstrate the feasibility and effectiveness of SLN visualization with a new positron emission tomography/computed tomography (PET/TC) tracer. In particular, [^{68}Ga]Ga-tilmanocept was proposed as a new radiopharmaceutical for SLN detection in ten thyroid cancer patients (seven DTC and three MTC patients). In all patients, 10 MBq and 120 MBq of [^{68}Ga]Ga-tilmanocept and ICG-[^{99}mTc]Tc-nanocolloid, respectively, were injected. PET/CT scan at 15 min and 60 min post-injection were obtained. The approximate location of the SLNs was preoperatively assessed and marked on the skin by PET/CT data. Subsequently, during surgery, only the SLNs demonstrating ICG-[^{99m}Tc]Tc-nanocolloid uptake at hand-held gamma probe and fluorescence camera imaging were removed. PET/CT detected eight SLNs in central compartment and nineteen SLNs in the lateral compartment of the neck. The pathologist found seventeen lymph node micro metastases in all patients, except one. These results demonstrate a good performance of this new PET tracer in the detection of SLN, despite the small number of patients included [14].

In this work, a possible role of PET/CT in SLN detection in thyroid cancer has been proposed in patients with a more aggressive thyroid cancer, like metastatic and iodine-refractory disease [15–22]. This study opens an interesting debate on the diagnostic and prognostic value of PET/CT tracers in thyroid cancer patients.

Declarations

Ethical approval Institutional Review Board approval was not required because the paper is an Editorial.

Consent to participate Not applicable

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