Is fludeoxyglucose-fluorodeoxyglucose-positron emission tomography/computed tomography (^{18}F-FDG-PET/CT) really useless in staging pulmonary carcinoid tumors and in discriminating histological subtypes? Controversial points and future perspectives

Sir,

Bronchial carcinoids (BCs) have been traditionally described as tumors with low fluorodeoxyglucose (FDG) uptake, most likely because of their metabolism and slow growth. Several authors evaluated the role of FDG-positron emission tomography (PET) in BCs reporting conflicting results on the detection rate (range 14-90%), as detailed in a recent systematic review.[1] A correct pathological identification of such tumors during the pre-operative setting is a key element for planning the best strategy of care, considering the different biological behavior of BCs. In fact, atypical carcinoids (ACs) are associated with a definitely poorer prognosis compared to typical carcinoids (TCs).[2]

In this setting, Tatci *et al*.[3] have recently reported the FDG-PET/computed tomography (CT) findings in a cohort of 22 surgically treated BCs. The overall sensitivity of FDG-PET/CT for detecting BC was sub-optimal (81.8%) and sensitivity for lymph nodal metastases was poor (25%). Moreover, according to Tatci,[3] the radiometabolic evaluation *"…cannot discriminate typical carcinoids from atypical ones and the absence of an FDG avid lesion cannot exclude pulmonary carcinoid tumor."*

We have appreciated the contribution of the Authors in this controversial and still open debate that prompted us a series of reflections, discussed herein.

First of all, as recently remarked by Stefani,[4] considering the indolent biological behavior of such neoplasms (low mitotic count) an increased detection rate of FDG-PET could be

obtained by using a lower maximum standardized uptake value (SUVmax) cut-off and considering the normal lung, and not the mediastinum (as in)[3], as background region for the visual assessment. This is useful especially for TCs, which commonly show low FDG uptake. Applying a SUVmax cut-off of 1.5 to the radiometabolic findings reported in,[3] we found only one "false negative" case (SUVmax = 1.2 in a TC) and overall detection rate would stand at 95.5%.

Moreover, concerning the FDG-PET ability to discriminate the hystological type in BCs, the literature[1] seems to suggest that a significant higher SUVmax may be observed in ACs compared to TCs at FDG-PET. Maybe the limited number of patients enrolled by Tatci *et al*. may explain the absence of significant difference in SUVmax between ACs and TCs (5.6 ± 3.3 vs. 4.7 ± 2.2, respectively; the exact value of Mann-Whitney U-test was not provided). In addition, we would to highlight the increasing interest of the scientific community concerning the role of somatostatin receptor (SSTR) PET/CT in BCs. The introduction of SSTR-PET/CT (alone or in combination with FDG-PET/CT) seems to increase the overall detection rate and the ability to discriminate between ACs and TCs.[5,6]

Finally, we completely agree with the Authors[3] in remarking the strong limitations of FDG-PET in staging lymph nodal involvement in BCs, especially when a low FDG uptake makes it difficult to detect a metastatic lymph node inside the mediastinal activity. In fact, this probably represents the main controversial issue in the staging of BCs (with very few data on this topic) deserving further investigations. Here again, the SSTR-PET/CT may help to improve the accuracy of the staging (especially in TCs).

We would greatly appreciate the Authors reflections and reactions on these points.

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References

1. Lococo F, Cesario A, Paci M, Filice A, Versari A, Rapicetta C, *et al*. PET/CT assessment of neuroendocrine tumors of the lung with special emphasis on bronchial carcinoids. Tumour Biol 2014;35:8369-77.
2. Rekhtman N. Neuroendocrine tumors of the lung: An update. Arch Pathol Lab Med 2010;134:1628-38.
3. Tatci E, Ozmen O, Gokcek A, Biner IU, Ozaydin E, Kaya S, *et al*. 18F-FDG PET/CT rarely provides additional information other than primary tumor detection in patients with pulmonary carcinoid tumors. Ann Thorac Med 2014;9:227-31.
4. Stefani A, Franceschetto A, Nesci J, Aramini B, Proli C, Kaleci S, *et al*. Integrated FDG-PET/CT imaging is useful in the approach to carcinoid tumors of the lung. J Cardiothorac Surg 2013;8:223.
5. Lococo F, Treglia G, Cesario A, Paci M, Filice A, Versari A, *et al*. Functional imaging evaluation in the detection, diagnosis, and histologic differentiation of pulmonary neuroendocrine tumors. Thorac Surg Clin 2014;24:285-92.
6. Treglia G, Giovanella L, Lococo F. Evolving role of PET/CT with different tracers in the evaluation of pulmonary neuroendocrine tumours. Eur J Nucl Med Mol Imaging 2014;41:853-5.

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