PET/CT used in the evaluation of pulmonary nodules suspicious for lung cancer in regions where infectious lung disease is endemic: to be or not to be?

Dear Editor,

The assessment of patients with suspected lung malignances[1–4] has routinely included morphological imaging evaluation, with either chest X-rays or chest computed tomography (CT). In addition—although not diagnostic in character—^{18}F-fluorodeoxyglucose positron emission tomography (FDG-PET), bone scintigraphy, and (occasionally) somatostatin receptor scintigraphy have been increasingly incorporated into daily practice in recent decades, providing physicians with useful and complementary information on the functional characteristics of lesions[5,6]. More recently, the emergence of combined PET/CT imaging has greatly aided the investigation of lung cancer by allowing even better delineation of areas with increased tracer uptake. This modality has helped radiologists avoid the technical difficulties that arose from the independent combination of PET and CT examinations, which resulted in substantial artifacts.

Many patients with early stage lung cancer will present with a solitary pulmonary nodule (SPN), defined as a single spherical or oval lesion that is less than 3 cm in diameter and is completely surrounded by pulmonary parenchyma without accompanying atelectasis or lymph node enlargement[5,6]. A very important step in investigating the etiology of an SPN is to determine whether it is benign or malignant in nature. In addition, PET/CT has been shown to be an accurate tool for the work-up of SPNs and for lung cancer staging, by improving the detection of metastatic disease, guiding therapy, and allowing clinical outcomes to be predicted[5–7]. However, there are a number of pitfalls to be considered during the assessment of SPNs with PET. In patients with inflammatory conditions or infections—such as bacterial or fungal infections; granulomatous diseases (tuberculosis, sarcoidosis, histoplasmosis, etc.); and pyogenic abscesses—there is a greater likelihood of higher metabolic activity due to increased granulocyte or macrophage activity, and such comorbidities have become a cause for great concern in some regions of Brazil[8–10].

In a recent study published in **Radiologia Brasileira**, Mosmann et al.[11] reviewed the evaluation of SPNs, in order to discuss the current role of FDG-PET (addressing its accuracy and cost-effectiveness) and to detail the current recommendations for the examination in this scenario. However, the authors did not focus on the applicability of FDG-PET in areas endemic for infectious granulomatous diseases. Deppen et al.[12] performed the most recent and biggest meta-analysis about the diagnostic accuracy of FDG-PET for pulmonary nodules suspicious for lung cancer, comparing the accuracy of the test in regions where infectious lung disease is endemic with that reported for regions where such disease is rare[8]. The pooled (unadjusted) sensitivity and specificity were 89% (95% CI: 86–91%) and 75% (95% CI: 71–79%), respectively. The adjusted specificity was 16% lower for regions where infectious lung disease is endemic than for those where it is not—61% (95% CI, 49–72%) versus 77% (95% CI, 73–80%). The specificity was also lower when the analysis was limited to rigorously conducted and well-controlled studies. The conclusion is that the data do not support the use of FDG-PET to diagnose lung cancer in areas where infectious lung disease is endemic unless an institution achieves test performance accuracy similar to that found in areas where it is not[12]. Because Mosmann et al.[11] did not include these data in their review, is important to highlight that fact.

REFERENCES

1. Franco RM, Guimaraes MD, Moreira BL, et al. Enhancing survival with early surgical resection of endobronchial metastasis in a follow-up of ovarian carcinoma. Radiol Bras. 2015;48:130.
2. Guimaraes MD, Hochhegger B, Koenigkam-Santos M, et al. Magnetic resonance imaging of the chest in the evaluation of cancer patients: state of the art. Radiol Bras. 2015;48:33–42.
3. Batista MN, Barreto MM, Cavaguti RF, et al. Pulmonary artery sarcoma mimicking chronic pulmonary thromboembolism. Radiol Bras. 2015;48:333–4.
4. Silva Junior GM, Zanetti GMR, Barillo JL, et al. Peripheral primitive neuroectodermal tumor of chest wall in young adult. Radiol Bras. 2015;48:59–60.
5. Hochhegger B, Alves GR, Irion KL, et al. PET/CT imaging in lung cancer: indications and findings. J Bras Pneumol. 2015;41:264–74.
6. Sharma P, Singh H, Basu S, et al. Positron emission tomography-computed tomography in the management of lung cancer: an update. South Asian J Cancer. 2013;2:171–8.
7. Ambrosini V, Nicolini S, Caroli P, et al. PET/CT imaging in different types of lung cancer: an overview. Eur J Radiol. 2012;81:988–1001.
8. Truong MT, Viswanathan C, Erasmus JJ. Positron emission tomography/computed tomography in lung cancer staging, prognosis, and assessment of therapeutic response. J Thorac Imaging. 2011;26:132–46.
9. Opoka L, Kunikowska J, Podgajny Z, et al. Accuracy of FDG PET/CT in the evaluation of solitary pulmonary lesions – own experience. Pneumonol Alergol Pol. 2014;82:198–205.
10. Allen TL, Kendi AT, Mitiek MO, et al. Combined contrast-enhanced computed tomography and 18-fluoro-2-deoxy-D-glucose-positron emission tomography in the diagnosis and staging of non-small cell lung cancer. Semin Thorac Cardiovasc Surg. 2011;23:43–50.
11. Mosmann MP, Borba MA, Macedo FP, et al. Solitary pulmonary nodule and 18F-FDG PET/CT. Part 2: accuracy, cost-effectiveness, and current recommendations. Radiol Bras. 2016;49:104–11.
12. Deppen S, Putnam JB Jr, Andrade G, et al. Accuracy of FDG-PET to diagnose lung cancer in a region of endemic granulomatous disease. Ann Thorac Surg. 2011;92:428–32.

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Neurological symptoms in a case of acute aortic dissection

Dear Editor,

A 52-year-old female with aortic dissection presented with neurological symptoms and signs, in a markedly acute presentation, of flaccid paraplegia and painful hypoesthesia of the lower limbs. She also presented postoperative monoplegia of the left arm. Computed tomography angiography of the chest confirmed the diagnosis of type A dissection (Stanford classification), with extension to the infrarenal abdominal aorta, associated with extensive subocclusive thrombus in the thoracoabdominal transition of the aorta (Figure 1A). On T2-weighted magnetic resonance imaging (MRI) sequences, hyperintensity was observed in the anterior horns of the spinal cord (Figures 1B and 1C), featuring an "owl eye" sign in axial images[1], together with enhancement after administration of paramagnetic contrast, as well as restricted