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LETTERS TO THE EDITOR

F18-FDG-PET/CT standardised uptake value threshold in discriminating benign vs. malignant lesions. Doubts and certainties in the era of evidence-based medicine

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To the Editor,

An interesting article has recently been published on Acta Oncologica [1] evaluating whether in oncological F18-FDG PET/CT a diagnostic maximum standardised uptake value (SUVmax) threshold may exist in differentiating benign and malignant lesions in four different sites and clinical scenarios (solitary pulmonary nodule, mediastinal lymph-nodes, cervical lymph-nodes, and adrenal gland). Lesion size and SUVmax values between benign and malignant lesions were statistically significantly different except for dimension of solitary pulmonary nodule, suggesting a possible role of SUVmax in differentiating benign from malignant lesions and identifying a cut-off for differential diagnosis. Apart from the interesting analysis and the effort to find a cut-off in the light of evidence based medicine, we agree and highlight the remarks and concerns reported by the authors in the current paper. In particular, measuring SUVmax is not simply reaching a number but rather an interpretative key. This is something different from a simple observation and description of a process because it means its quantification in terms of intensity. Quantitation is a peculiar diagnostic advantage of nuclear medicine which reflects the ability to detect and measure physiologic and pathologic metabolic processes. Certainly, measuring is a great opportunity and a very useful tool necessary for modern medicine but we would stress the doubts about the real meaning of SUVmax alone (which should be theoretically corrected for lesion size, partial volume effect and for glycaemia) in discriminating benign from malignant tissues. In fact, despite SUVmax is a semi-quantitative parameter that reflects metabolic activity frequently correlated with biologic aggressiveness and clinical behaviour of malignant lesions, it is not a specific marker of malignancies. Inflammatory and infectious diseases frequently show very high SUVmax values not significantly different from those expressed by malignant tumours [2,3]. Moreover many benign lesions as thyroid [4–6] and hepatic [7,8] adenoma often reveal high SUVmax value, not different and sometimes higher than those expressed by malignant tumours. A lot of different cut-off and thresholds have been proposed for different neoplastic tissues, often useful in orienting our diagnostic evaluation, but no safe and definitive SUVmax value for each tumour has been identified yet. As a result we don't have to measure SUVmax and establish a cut-off simply to get a number or a threshold beyond which establish a diagnosis. We have to view it as a diagnostic mosaic composed of many pieces, each of which is related to the other and is to be considered in the light of all the others. The integration of clinical and imaging results is the key to the appropriate use of diagnostic tools and to the improvement of diagnostic accuracy without losing important pieces of information confining and limiting them only into simple numbers.

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