

The Situations Which May Cause False-Negative Results in Oncological FDG-PET/CT Practice

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To the Editor,

It is important to have a thorough knowledge about the conditions or situations which may lead to insufficient fluorine-18 fluorodeoxyglucose (FDG) uptake and false negative results, particularly in oncological FDG-positron emission tomography / computed tomography (PET/CT) practice. Small tumour or metastatic lymph node dimensions (1,2), necrotic areas within the tumour, high levels of blood glucose and insulin (3) may be the causes of false-negative FDG-PET/CT findings.

In suspicious cases with unexpectedly low FDG affinity, history of corticosteroid treatment with increased doses, radiation therapy and chemotherapy should be questioned (3,4). Well-differentiated forms of various malignancies such as hepatocellular carcinoma, some cases of genitourinary tract carcinomas including prostate cancer (3), some cases of ova-

rian cancer (5), various neuroendocrine tumours and malignancies of the thyroid gland (3), some head and neck squamous cell carcinomas without a known primary (6), some cases of esophageal carcinoma (7), some subtypes/cases of bronchioloalveolar carcinomas (8, 9), some cases of multiple myeloma (10), various metastatic bone tumours (particularly the sclerotic ones) (11), some cases of lobular breast carcinomas, as well as some low-grade malignancies (e.g. some central nervous system tumours and some sarcomas), lymphoma, and malignancies including high amounts of mucin may present with low FDG uptake (3).

In order to overcome this diagnostically challenging situation, it is mandatory to evaluate the plain CT components of FDG-PET/CT images meticulously. But since this may not give sufficient data in some patients, the

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images which have readily or previously been obtained by other tools such as plain radiography, fluoroscopy, ultrasonography, mammography, contrast enhanced CT and magnetic resonance imaging should be evaluated at the same setting. Also, all the clinical and laboratory findings should be correlated with FDG-PET/CT findings. In indeterminate cases, the diagnosis should be verified by biopsy in appropriate patients.

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