ROLE OF PET/CT IN THE EVALUATION OF SOLITARY PULMONARY NODULE

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List of Abbreviations

F18-(FDG)	F18-fluoro-deoxyglucose
BAC	Bronchioloalveolar cell carcinoma
CT	Computed tomography
CTA	CT angiography
GLUT	Glucose transporters
HU	Hounsfield units
KCC	Kulchitsky cell cancers
LCNEC	Large cell neuroendocrine carcinoma
MIP	Maximum intensity projection
NSCLC	Non-small-cell lung cancer
PAVM	Pulmonary arteriovenous malformations
PET	Positron emission tomography
PMTs	Photomultiplier tubes
PS	Pulmonary sequestration
SCLC	Small-cell lung carcinoma
SPN	Solitary pulmonary nodule
SUV	Standardized uptake value
TB	Tuberculosis
WG	Wegener granulomatosis

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Introduction and Aim of the Work

Solitary pulmonary nodule (SPN) is typically defined as an intraparenchymal focal, round or oval area of increased opacity < 3 cm in diameter *(Khouri et al., 1987) & (Viggiano et al., 1992)*.

Nearly 1 in every 500 chest radiographs taken reveals a newly diagnosed SPN. This estimate is mainly based on chest radiographs. Now, with increasing use of computed tomography (CT) of the chest for screening of lung cancer and chest CT angiography (CTA) for diagnosing pulmonary embolus and for cardiac evaluation, this number is rapidly increasing *(Neyman et al., 2006).*

The differential diagnoses of a solitary pulmonary nodule are broad and management depends on whether the lesion is benign or malignant. PET-CT findings can help to differentiate between benign and malignant nodules *(Swensen et al., 2005)*.

Imaging continues to play a major role in the management of oncologic patients. Most imaging modalities yield purely anatomic and morphologic tumor detail without addressing tumor metabolism. The advent of positron emission tomography (PET) with F18- fluoro-deoxyglucose (FDG) has provided tumor-related qualitative and quantitative metabolic information critical to patient diagnosis and management. PET enables the detection of increased metabolic activity in tissue that can appear morphologically normal on other imaging modalities. It can also assist in the differentiation of benign from malignant lesions and in the imaging follow-up of cancer patients following surgery, radiation, or chemotherapy *(Rohren et al., 2004) & (Kostakoglu et al., 2003) & (Kluetz et al., 2000)*.

PET, however, is limited by relatively poor spatial resolution, whereby accurate anatomic localization of foci of increased metabolic activity may be difficult or impossible.