

PET scan contribution in chest tumor management: a systematic review for thoracic surgeons

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ABSTRACT

Aims and background. In the 90s, the introduction of positron emission tomography (PET) represented a milestone in the staging of thoracic tumors. In the last 10 years, PET scan has been widely adopted in thoracic oncology, showing high accuracy in diagnosis and staging and with promising issues in defining prognosis. The aim of this systematic review was to focus on the results and pitfalls of PET scan use in the modern management of chest tumors.

Methods and study design. The literature search was performed on May 2010 in PubMed, Embase, and Cochrane according to PRISMA protocol. The search was restricted to publications in English, using in the same string the word "PET" with 9 different chest tumors; results were then filtered by eliminating technical articles, focusing only on papers in which surgery was considered as a potential diagnostic or therapeutic tool. From 6600 papers initially selected, 99 manuscripts were fully analyzed.

Results. Glucose uptake is a metabolic marker useful in the diagnosis and staging of chest tumors. In lung cancer screening, standard uptake value is helpful in defining the risk of malignancy of isolated pulmonary nodules. The addition of PET scan to conventional staging increases detection of nodal and distant metastases in lung cancer, esophageal cancer and malignant mesothelioma. In thymoma, a close relationship between standard uptake value, histology, and Masaoka stage has been advocated. This link between glucose uptake and prognosis suggests that PET translates biological tumor behavior into clinically detectable findings.

Conclusions. PET scan has a crucial role in thoracic oncology due to its impact on diagnosis, staging and prognosis. PET scan expresses the biological behavior of tumors, opening interesting perspectives in chest tumor management and improving detection and stage grouping in lung cancer. It anticipates the diagnosis in long-incubating diseases such as mesothelioma and increases biological knowledge of rare diseases, such as thymoma and other mediastinal tumors.

Key words: lung cancer, PET scan, thoracic tumors.

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