



Service Priorities and Programmes Electronic Presentations

Convention ID: 735

Submitting author: Others Siu Keung, Marco LO

Post title: Physicist, Tuen Mun Hospital, NTWC

Scoping Search of Solitary Pulmonary Nodule Diagnostic Workup Strategy Alternative to PET

LO M

Medical Physics Unit, Department of Clinical Oncology, Tuen Mun Hospital

Keywords:

Solitary Pulmonary Nodule

Odd Ratio

Diagnostic Odd Ratio

Pretest Probability

Introduction

The 2012 review of PET services in HA for solitary pulmonary nodule (SPN) summarized that PET appears to be economically justified for patients with discordant CT and pretest risk-assessments of malignancy. What is known from existing literatures on PET utilization for individualized diagnostic workup of the lesions?

Objectives

While differences in patient outcomes result from patient attributes or risk factors affecting response to care, effectiveness of care, quality of care and chance a diagnostic workup strategy for any disease should be directly connected to its management of the outcomes. This study sought an index of effect size for decision of alternative to FDG PET workup of SPN at pretest probability of malignancy ~50% with the most favorable individual risk-benefit outcome.

Methodology

A methodological scoping review approach is adopted to (1) survey literatures of type guideline and meta-analysis with terms which are literary warrant in combination to identify comparators to the FDG PET index test; (2) compare and contrast the clinical consequences of each alternative comparator; and (3) map out the reported effective size indices for risk-benefit profiling.

Result

The most cited alternative to the PET workup is tissue sampling with either electromagnetic navigational bronchoscopic (ENB) biopsy in central lesions or percutaneous CT-guided biopsy, core needle (PCNB)/fine-needle aspiration (FNAB), in peripheral lesions. The downside of lung biopsies is development of complications such as pneumothorax, pulmonary hemorrhage, air embolism and tumor seeding of the pleura and chest wall. COPD (OR ~2.5) and tobacco consumption (OR ~1.5) are major risk factors of pneumothorax requiring chest tube while female gender (OR ~1.4) is mostly associated with hemorrhage. The diagnostic strategy could be built on the risk-benefit profile of each alternative with accuracy performance in diagnostic OR

(DOR) as the benefit measures. DOR reported from meta-analysis of FDG PET, ENB, PCNB and FNAB for SPN workup are 97.31, 97.62, 821.90 and 210.72 respectively. FDG uptake is non-specific to malignancy; PET findings may also raise questions about whether uptake in a lesion is an indication for biopsy. Interventional PET/CT can further optimize the diagnostic yield of biopsies due to its ability to target malignancies and other disease processes using metabolic characteristics rather than morphologic changes only. Traditionally transthoracic needle biopsies have been performed using freehand technique and accrued risk factors that could be operator dependent, numerous devices have been constructed varying from low cost gadgets to highly sophisticated systems to minimize the number of puncture passes and decrease morbidity.