

Effect of PET/CT on Management of Patients with Non–Small Cell Lung Cancer: Results of a Prospective Study with 5-Year Survival Data

Deborah L. Gregory, et al, Department of Radiation Oncology, Centre for Cancer Imaging, Peter MacCallum Cancer Centre, Melbourne, Victoria, Australia. *Journal of Nuclear Medicine*, vol. 53, no. 7, 1007-1015, July 1, 2012.

Abstract

We investigated the incremental management impact and prognostic value of staging with ^{18}F -FDG PET/CT in patients with non–small cell lung cancer (NSCLC) being considered for potentially curative therapies.

Methods: Information on 168 consecutive patients with NSCLC being considered for surgery or definitive radiotherapy with curative intent before PET/CT was entered into a prospective database. The pre-PET/CT management plan, based on conventional imaging (conventional CT, appropriately supplemented by bone scintigraphy or other modalities), was defined prospectively by referring clinicians before PET/CT results became available. After PET/CT, actual clinical management was recorded, and patients were followed up until 5 y or death. The appropriateness of PET/CT management plans was assessed by biopsy when available, clinical follow-up, and survival analysis.

Results: Stage was discordant on PET/CT and conventional imaging in 50.6% of patients (41.1% upstaged, 9.5% downstaged), with high management impact (change in treatment modality or curative intent) in 42.3% of patients. Both conventional imaging stage and PET/CT stage were strongly predictive of overall survival (OS) but there were greater differences between hazard rates and separations in the OS curves for stage groupings determined using PET/CT. OS was also strongly predicted by PET/CT-directed choice of therapy ($P < 0.0001$).

Conclusion: PET/CT frequently affects patient management and strongly predicts OS in NSCLC, supporting the appropriateness of such changes.

J Nucl Med, vol. 53, no. 7, 1007-1015, July 1, 2012.



JNM: PET/CT alters NSCLC patient management

Information from PET/CT has a significant effect on the management of patients with non-small cell lung cancer (NSCLC), as more than 40 percent had their treatment modality or curative intent changed when physicians had PET/CT data as opposed to only conventional imaging, according to a study published in the July issue of the *Journal of Nuclear Medicine*.

Study authors Deborah L. Gregory, MD, of the Peter MacCallum Cancer Centre in Melbourne, Australia, and colleagues explained that even though PET/CT has the ability to fuse structural and functional information to aid in cancer imaging, there are ongoing questions about the modality's cost-effectiveness.

“Despite a rapidly growing body of literature indicating that, compared with conventional imaging, PET/CT has superior diagnostic accuracy, especially for detecting distant nodal and systemic metastatic sites that are critical for selecting treatment and defining prognosis, the clinical utility of this new technology continues to be questioned by health funding agencies,” they wrote.

To evaluate both the clinical impact of PET/CT diagnostic information and its prognostic significance based on overall survival, the authors entered data from 168 consecutive patients into a prospective database. All were patients with NSCLC being considered for surgery or definitive radiotherapy with curative intent before PET/CT information was entered.

Referring physicians defined a pre-PET/CT management plan based on conventional CT or other modalities, then after PET/CT, an actual clinical management plan was recorded and patients were followed for up to five years.

Results showed that stage was discordant between PET/CT and conventional imaging in more than half of the patients, with 41.1 percent being upstaged and 9.5 percent downstaged following PET/CT. With regard to management, 42.3 percent of patients saw a change in their treatment modality or curative intent following PET/CT.

Both PET/CT and conventional imaging were strongly predictive of overall survival, but there were greater differences between hazard rates and separations in the overall survival curves for stage groupings



determined with PET/CT, according to the authors. PET/CT-directed choice of therapy also strongly predicted overall survival.

“For individual patients, selection of ideal treatment and subsequent outcome in [NSCLC] depends critically on disease extent,” wrote Gregory et al. “More accurate characterization of stage should lead to avoidance of futile attempts at curative treatment and result in either improved prognostic stratification or no worse outcomes in individual stage groups despite less aggressive therapies.”

The authors indicated that economic modeling based on prospective data like those in the current study could allow for valid estimates of the cost-effectiveness of PET/CT.

Last Updated on Friday, July 06

Copyright © 2012 TriMed Media Group, Inc.