ORIGINAL ARTICLE

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Should mediastinoscopy actually be incorporated into the FDG PET strategy for patients with non-small cell lung carcinoma?

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Background: Incorporating mediastinoscopy (MS) into the PET-based strategy for non-small cell lung carcinoma (NSCLC) patients might be cost-effective because MS can allow unnecessary thoracotomies to be avoided. The objective of our study was to assess the cost-effectiveness of incorporating MS into a PET strategy for NSCLC patients. ***Methods:*** To determine life expectancy (LE), quality adjusted life years (QALY), and the incremental cost-effectiveness ratio (ICER), a decision-tree sensitivity analysis was designed for histopathologically confirmed NSCLC patients with M0 disease, based on the three competing strategies of chest CT only vs. PET + CT vs. PET + CT + MS. A simulation of 1,000 NSCLC patients was created using baselines of other relevant variables in regard to sensitivity, specificity, mortality, LE, utilities and cost from published data. One-way sensitivity analyses were performed to determine the influences of mediastinal metastasis prevalence on LE, QALY and ICER. ***Results:*** The LE and QALY per patient in the CT only strategy, PET + CT strategy and PET + CT + MS strategy were 4.79 and 4.35, 5.33 and 4.93 and 5.68 and 5.33 years, respectively, with a 20% prevalence of mediastinal metastasis. The ICERs were ¥906.6 $\times 10^3$ (US$7,555)/QALY/patient at a 20% mediastinal metastasis prevalence, and ¥2,194 $\times 10^3$ (US$18,282)/QALY/patient at a 50% prevalence, but exceeded ¥5,280 $\times 10^3$ (US$44,000)/QALY/patient at 80%. ***Conclusions:*** Our study quantitatively showed the CT + PET + MS strategy in place of the PET + CT strategy in managing NSCLC patients to be cost-effective. MS should be incorporated into the PET + CT strategy for NSCLC patients except in those highly suspected of having mediastinal disease on chest CT or PET.

Key words: lung cancer, diagnosis and staging, mediastinoscopy, positron emission tomography (PET)