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LUNG CANCER

OP26 Does prior pulmonary tuberculosis affect the positivity rate of low-dose computed tomography during lung cancer screening?

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Background: Screening for lung cancer (LC) with low-dose computed tomography (LDCT) reduces mortality. However, high false-positives due to residual lung lesions from prior tuberculosis (TB) is a concern in TB-endemic countries.

Methods: We prospectively screened all high-risk individuals (aged 55-74 years with ≥30 pack-year [PY] history of smoking and patients of chronic obstructive pulmonary disease [COPD] aged 50-74 years with ≥20 PY) using LDCT at a tertiary care center. Evidence of prior TB (history of intake of anti-TB therapy or radiological sequelae) were noted. Evaluation and follow-up were performed as per National Comprehensive Cancer Network guidelines (NCCN v2.2019). Solid or part-solid nodules ≥6 mm, endobronchial abnormality, or mediastinal lymphadenopathy were considered positive. We also conducted exploratory analysis with nodule cut-off of ≥4 mm (according to NLST algorithm). Screen-positive rate (SPR) and LC detection rate (LCDR) were calculated. Our primary objective was to study the SPR after one round of LDCT scan. Our secondary objectives were LCDR, identifying predictors of positive LDCT results including prior TB, and analyzing costs incurred during LDCT screening.

Results: 253 individuals (98.4% male, mean [standard deviation] age of 62.3 [6.2] years, 96% had COPD) were included. Evidence of prior TB was observed in 197 (77.9%) individuals. SPR and LCDR were 32% (n=81) and 1.6% (n=4), respectively. Lung nodule, intrathoracic lymphadenopathy, and endobronchial abnormality were detected in 73, 5, and 3 individuals, respectively. Screen-positive individuals had heavier smoking exposure (40.9 [17.6] vs. 35.1 [14.2] PY, P=0.009). On multivariate analysis, only PY of smoking predicted a positive LDCT scan (OR [95% CI], 1.02 [1.01-1.04]; P=0.007). On exploratory analysis, the SPR was 45.1% with NLST cut-off. Both PY (OR 1.02 [1.00 to 1.04]; P=0.03) and prior TB (OR 1.98 [1.04 to 3.75]; P=0.03) were associated with a positive LDCT scan with NLST cut-off. Median cost per individual (subsidized rate applicable in public sector) for LDCT screening was 3516 INR (US$47) which is nearly 28% of the median monthly family income of the participants.

Conclusions: LDCT SPR in this study from a TB-endemic region was higher than that reported previously from non-endemic regions (NLST and NELSON). Higher SPR could be attributed to prior TB when using NLST cut-off, but not with NCCN cut-off. However, LCDR was similar.

Keywords: *Lung Cancer, LDCT, Lung Nodule*

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OP27 A phase II study of neoadjuvant erlotinib for operable stage II or IIIA non-small cell lung cancer with epidermal growth factor receptor activating mutations

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Background: Epidermal growth factor receptor (EGFR) tyrosine kinase inhibitors (TKIs) could be beneficial in the neoadjuvant setting for early stage EGFR mutant non–small-cell lung cancer (NSCLC) due to their robust response shown in advanced stage. However, the efficacy and safety for this setting have yet to be definitively documented. Herein we assessed the benefits of EGFR-TKIs as neoadjuvant therapies in stage II or IIIA EGFR mutant NSCLC.

Methods: This was single center, open-label, single arm, phase II trial of erlotinib as neoadjuvant/adjuvant therapy in patients with stage II or IIIA NSCLC with EGFR mutations in exon 19 or 21. Patients received erlotinib 150 mg/day (4 or 8weeks of neoadjuvant therapy depending on the response; adjuvant therapy, up to 4months). Assessments were performed at 4 weeks, right after surgery and every 3 months postsurgery. The primary end point was objective response rate (ORR; secondary end points were pathologic complete response, progression-free survival (PFS), overall survival (OS), safety, and tolerability. NanoString gene expression analysis were also performed to find up-regulated genes during the trial process.

Results: The median age was 61 years and 69.2% of patients were female. Majority of the patients were adenocarcinoma histology (84.6%) and never smoker (73.1%). The ORR for neoadjuvant erlotinib were 72% (95% confidence interval [CI], 52.7 -86.5). No pathologic complete response was identified. The median best percentage change after initial assessment of target lesion size was -45% (range, -64.7% - +37%). The median PFS and OS were 17.9months (95% CI, 10.5—25.4) and 84.7months (95% CI, 49.7—119.8) respectively. Observed adverse events reflected those most commonly seen with EGFR-TKIs. There were no significant safety signals during the trial. Genes involved in DNA damage repair, cell cycle apoptosis, and B cell functions pathways ($P < 0.05$) were over-expressed in baseline tissue. Meanwhile, interleukins, complement, cytokines, TGF-beta, and hedgehog ($P < 0.05$) pathways were activated in surgical tissue. Patients in partial response showed the significant activation of pathogen defense, interleukins, and T-cell functions pathways ($P < 0.2$).

Conclusions: Our ORR, PFS and OS were comparable to those observed in previous clinical trials. The outcome of this study is expected to be helpful demonstrating the potential role of neoadjuvant EGFR-TKIs in EGFR mutant NSCLC. Additional comprehensive gene expression analysis found out the clue for best patient candidate for this therapy.

Keywords: *Non-Small Cell Lung Cancer, Epidermal Growth Factor Receptor, Neoadjuvant*

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OP28 Cost-effectiveness analyses of durvalumab consolidation therapy compared to no consolidation therapy after definitive chemoradiotherapy in stage III NSCLC

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Background: Non-small cell lung cancer (NSCLC) is the most common form of lung cancer. Recently, Durvalumab was approved as a potential immunotherapy for the management of unresectable stage III NSCLC. To date, economic studies from different parts of the world presented varying findings. So, the objective of this study was to assess the cost-effectiveness of durvalumab consolidation therapy versus no consolidation therapy in patients with unresectable stage III NSCLC.

Methods: PubMed, Embase, and Cochrane Central databases were searched till March 2022 to identify all the studies assessing the economic evaluation of durvalumab in patients with unresectable stage III NSCLC who had not progressed after definitive chemoradiotherapy. Eligible studies were screened by two reviewers independently and the quality of included studies was evaluated using the updated version of Consolidated Health Economic Evaluation Reporting Standards (CHEERS 20222) checklists. By taking into account purchasing power parity, incremental cost-effectiveness ratio (ICER) data were converted to 2022 US dollars ($).

Results: A total of seven studies were found to be eligible for inclusion. The majority of studies were conducted in the US (n = 3), while one study each was conducted in China, Italy, Switzerland, and the UK. The healthcare payers' perspective was the most common study perspective among the included studies and the time horizon varied from 5 years to a lifetime. Half of the included studies received funding from Industry. Four included studies used the Markov model, while two studies employed the semi-Markov model and, the remaining one study used the decision-analytic model. The ICER of durvalumab consolidation therapy after unresectable stage III NSCLC in the US was found to be in the range of $59,850 to $145,543 per Quality-Adjusted Life Years (QALY). Likewise, the ICER of durvalumab in European countries was found to be in the range of $62,021 to $76,068 per QALY. Durvalumab was found to be cost-effective among all the included studies as the ICER was below the implemented country-specific willingness-to-pay thresholds.

Conclusions: Durvalumab consolidation therapy was found to be cost-effective compared to no consolidation therapy after chemoradiotherapy in stage-III NSCLC patients.

Keywords: *Durvalumab, Lung Cancer, NSCLC*

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