Erlotinib has comparable clinical efficacy to chemotherapy in pretreated patients with advanced non-small cell lung cancer (NSCLC): A propensity-adjusted, outcomes research-based study

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OBJECTIVES
Controversy exists about the integration of erlotinib in patients with EGFR wildtype, advanced NSCLC.

MATERIALS AND METHODS
We included patients with advanced NSCLC receiving at least two lines of palliative systemic treatment between January 2005 and December 2014 and not harbouring targetable driver mutations. Primary study endpoint was overall survival (OS), secondary endpoint progression-free survival (PFS). We used Kaplan-Meier statistics, multivariate Cox regression and Propensity score or Inverse Probability Weights (IPW) matching to compare clinical outcome between patients receiving erlotinib in second or further line and those receiving chemotherapy only. The study had a power of 90% to detect a survival superiority of 30%.

RESULTS
From a total of 827 patients, we excluded 171 patients with potentially curative treatment, 189 receiving treatment outside of our institute, 206 receiving no or only one line of systemic treatment, 6 with ALK translocations and 28 with EGFR mutations. From 227 patients in the final efficacy analysis, 125 patients received erlotinib in second (89 patients), third (28) or further-line (8), and 102 patients received chemotherapy only. Women and never smokers were significantly overrepresented in the erlotinib group. Both OS (hazard ratio (HR)=1.14, 95% CI 0.80-1.63, P=0.448) and PFS (HR=1.20, 95% CI 0.95-1.52, P=0.119) were similar in the erlotinib compared to the chemotherapy group using IPW-adjusted Cox regression analysis treating the use of erlotinib as a time-dependent covariate starting from second-line treatment and stratified for ECOG performance status and treatment line. ECOG performance status was the most powerful covariate to select patients for erlotinib treatment.

CONCLUSION
The present study suggests erlotinib to have similar clinical efficacy compared to chemotherapy in patients with pretreated advanced NSCLC and no known molecular targetable alterations.

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