EGFR gene copy number as a predictive biomarker for patients receiving tyrosine kinase inhibitor treatment: a systematic review and meta-analysis in non-small-cell lung cancer.

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Source

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Erratum in

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- Ann Oncol. 2011 Jul;22(7):1693.

Abstract

INTRODUCTION:

We conducted a systematic review and meta-analysis to assess epidermal growth factor receptor (EGFR) gene copy number as a potential biomarker of survival for patients with advanced non-small-cell lung cancer (NSCLC) receiving single-agent treatment with EGFR tyrosine kinase inhibitors (TKIs).

METHODS:

We systematically identified articles investigating EGFR gene copy number by fluorescent or chromogenic in situ hybridization in patients with advanced or recurrent NSCLC treated with the TKIs erlotinib or gefitinib, (last search: 31 June 2009). Eligible studies had to report on overall survival (OS), progression-free survival (PFS) or time-to-progression (TTP), stratified by EGFR gene copy number. Summary hazard ratios (HRs) were calculated using random-effects models.

RESULTS:

Among 255 identified studies, 20 (1689 patients, 594 with increased gene copy number), 10 (822 patients, 290 with increased gene copy number) and 5 (294 patients, 129 with increased gene copy number) were eligible for the OS, PFS and TTP meta-analyses, respectively. Increased EGFR gene copy number was associated with increased OS (HR = 0.77; 95% CI 0.66-0.89; P = 0.001), PFS (HR = 0.60; 95% CI 0.46-0.79; P<0.001) and TTP (HR = 0.50; 95% CI 0.28-0.91; P = 0.02). Among predominantly white populations, increased EGFR gene copy number was strongly associated with improved survival (HR = 0.70; 95% CI 0.59-0.82; P<0.001), whereas it did not influence survival in East Asians (HR = 1.11; 95% CI 0.82-1.50; P=0.50). This difference was statistically significant (P=0.02).

CONCLUSION:

Among TKI-treated patients, increased EGFR gene copy number appears to be associated with improved survival outcomes. The effect on OS appears to be limited to patients of non-Asian descent.

Comment in

- Ann Oncol. 2011 Mar;22(3):493-9.