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Detection and Its Clinical Significance of EGFR Gene Mutation and Gene Amplification in 187 Patients with Non-small Cell Lung Cancer

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摘要

Background and objective It has been demonstrated that epidermal growth factor receptor (EGFR) signal pathway had an important role in the oncogenesis and development of non-small cell lung cancer (NSCLC). Small-molecule tyrosine kinase inhibitors (TKIs) that target at the kinase domain of EGFR are recently developed target therapy reagents for treatment of NSCLC patients. Previous studies revealed that different patient groups response differently to EGFR-TKI, which is based on the EGFR gene status. The aim of this research was to define the clinicopathologic features associated with the gene amplification and mutation status of the EGFR gene in NSCLC patients and determine the most likely population to benefit from TKI treatment. Methods 187 of NSCLC cases were collected. The mutation status of EGFR exon 19 and 21 were determined by Real-time PCR, as well as the gene amplification status of EGFR gene by FISH. The relationship between EGFR mutation and gene amplification and the clinical pathologic features were analyzed with ?2 test. Results EGFR gene amplifications were identified in 89 of 187 samples (47.6%). EGFR gene amplification was not associated with age, gender, pathological type, smoking status and metestasis status (P > 0.05). 20.3% (38/187) of NSCLC patients had EGFR gene mutation. EGFR gene mutation rates were significantly higher in the female (32.3% vs 14.4% male), non-smoker (38.2% vs 10.1% smoker) and patients with adenocarinoma (35.5% vs 9.9% non-adenocarcinoma) (P < 0.05). There was a correlation between EGFR gene mutation and gene amplification (P=0.012), especially in the early stage, adenocarcinoma and never smoking female patients. The patients with EGFR gene mutation and/or gene amplification had longer overall survival than those without, but had no significant difference (P >0.05). The patients with EGFR gene mutation had a better response to TKIs therapy than those without. Conclusion The EGFR gene mutation rate is different in the patients with different

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lung cancers. EGFR gene mutation occurs more frequently in female, non-smoker and patients with adenocarcinoma. Although there wasn't a significant relationship between EGFR gene amplication and the clinicopathologic features, EGFR gene amplication may correlate with the prognosis of lung cancer patients.

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