Correlation of \textit{EGFR} gene amplification with invasion and metastasis of non-small cell lung cancer

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\textbf{ABSTRACT.} The aim of this study was to explore epidermal growth factor receptor (\textit{EGFR}) gene amplification and its relationship with cancer invasion and metastasis in non-small cell lung cancer (NSCLC). \textit{EGFR} amplification in 45 patients with NSCLC and 15 subjects with normal lung tissues was detected by fluorescence \textit{in situ} hybridization. The relationship between \textit{EGFR} amplification and the clinicopathologic features of NSCLC was analyzed. \textit{EGFR} gene amplifications were identified in 2 of 15 normal lung tissues (13.33\%) and in 29 of 45 NSCLCs (64.44\%). Patients $<$60 years had a 66.67\% \textit{EGFR} amplification rate, while patients $\geq$60 years had a rate of 62.50\%. The \textit{EGFR} amplification rates in male and female patients were 64.0\% (16/25) and 65.0\% (13/20), respectively. Pathologically, the \textit{EGFR} amplification rate of patients with squamous cell carcinoma was 56.52\% (13/23), and with adenocarcinoma was 72.72\% (16/22). The \textit{EGFR} amplification rate in NSCLCs with well-moderate differentiation was
lower than in those with poor differentiation; 48.0% (12/25) vs 85.0% (17/20), respectively. Patients with lymph node metastasis had nearly double the amplification rate than those without metastasis; 90.0% (18/20) vs 44.0% (11/25), respectively. The rate of EGFR amplification was significantly higher in NSCLC than in normal lung tissue (64.44 vs 13.33%, P < 0.05), and was not correlated with age or gender (P > 0.05), but increased with clinical stage in NSCLCs (P < 0.05). Overall, these studies found that the rate of EGFR gene amplification was increased significantly in NSCLC and was closely related to lymphatic metastasis and TNM stage.

**Key words:** NSCLC; Metastasis; FISH; EGFR