Inhibitors of epidermal growth factor receptor suppress cell growth and enhance chemosensitivity of nasopharyngeal carcinoma cells in vitro

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摘要

Abstract

Objective: Epidermoid growth factor receptor (EGFR, HER1) is overexpressed in a majority of head-and-neck cancers, including nasopharyngeal carcinoma (NPC). Although EGFR inhibitors appear to be effective for some head-and-neck cancers, their efficacy in NPC remains unclear. Methods: The effect of EGFR-specific tyrosine kinase inhibitors, including PD153035 and ZD1839, were studied in NPC-TW01, NPC-TW04, and HONE1 cell lines. The effect of combining EGFR inhibitors with cytotoxic agents was evaluated in NPC-TW04 cells. Results: All three NPC cell lines expressed EGFR. PD153035 and ZD1839 inhibited the growth of NPC cells with IC50s around 10 and 20 μM, respectively. These inhibitors, however, effectively suppressed ligand-stimulated EGFR activation in NPC cells with a much lower concentration (0.1 μM). The growth-suppression activity of EGFR inhibitors was closely associated with suppression of AKT phosphorylation. LY294002, a phosphatidylinositol-3 kinase (P13K)/AKT inhibitor, did suppress the growth of NPC cells. Pretreatment of EGFR inhibitors by 24 h significantly enhanced the cytotoxic effect of doxorubicin, paclitaxel, cisplatin, and 5-fluororuacil in NPC-TW04 cells. Conclusions: Our data indicate that inhibition of EGFR activation is not sufficient to induce growth inhibition in NPC cells in vitro. EGFR inhibitors may be useful adjuncts in treating NPC when combined with conventional anticancer drugs.