

Integrin-linked kinase silencing induces a S/G2/M phases cell cycle slowing and modulates metastasis-related genes in SGC7901 human gastric carcinoma cells

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ABSTRACT

Background and aim. Integrin-linked kinase has been implicated in metastasis of human tumors. Recent studies have also shown that the down-regulation of integrin-linked kinase has anti-tumor potential by inhibiting the metastatic potential of several types of cultured human cancer cells. However, the mechanism by which integrin-linked kinase regulates metastasis in human gastric carcinoma is not fully clear. We investigated the effect of integrin-linked kinase deletion on metastasis-associated markers in human gastric carcinoma SGC-7901 cell lines.

Methods. We generated cell lines depleted for integrin-linked kinase. Cell adhesion and invasion were measured by the MTS assay and transwell assay. The cell cycle was measured by flow cytometry. Expression of metastasis-related genes was assessed by reporter assay, quantitative RT-PCR and western blotting.

Results. Our data showed an inhibitory effect on cell adhesion and invasion after silencing of integrin-linked kinase. The cell cycle was slowed in S/G2/M phases. Metastasis-related genes E-cadherin, MMP-2/9 and cystatin B, as well as the signaling molecules p-Akt, NF- κ B, and AP-1 activation, were also modulated. Our results indicate that integrin-linked kinase plays an important role in metastasis of human gastric carcinoma cells.

Conclusions. Down-regulation of integrin-linked kinase resulted in the impairment of the metastatic potential of gastric tumor cells by regulating metastasis-related gene expression, by inhibiting the Akt pathway as well as the activity of transcription factors. Integrin-linked kinase could be used as a potential therapeutic target.

Key words: gastric carcinoma, integrin-linked kinase, metastasis-related gene, tumor metastasis.

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