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Kaiso is expressed in lung cancer: Its expression and localization is affected by p120ctn

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Kaiso is expressed in lung cancer: Its expression and localization is affected by p120ctn
Previous ArticleBreast cancer resistant protein (BCRP) is a molecular determinant of the outcome of photodynamic therapy (PDT) for centrally located early lung cancer
Next ArticleAnalysis of GD2/GM2 synthase mRNA as a biomarker for small cell lung cancer

Abstract

Background

Kaiso is a recently identified transcription factor that binds to p120-catenin (p120ctn), an Armadillo catenin and cell adhesion cofactor. However, clinical studies of human solid tumors have not been reported to investigate relationship between these proteins.

Methods

Expression and localization of Kaiso and p120ctn were examined in 196 lung cancer specimens (including 55 cases of paired lymph node metastases and 80 cases with complete follow-up records) by immunohistochemistry. Three lung cancer cell lines, BE1, SPC, and A549 were used to establish p120ctn stably ablated or overexpressed cell lines. Co-immunoprecipitation was used to confirm p120ctn bind Kaiso in lung cancer tissue and cell lines. Localization and expression levels of Kaiso were detected via immunofluorescence, cytoplasmic vs. nuclear fractionation Western blot analysis and reverse transcription-polymerase chain reaction.

Results

Cytoplasmic Kaiso expression was evident in 115 (58.7%), and abnormal p120ctn expression was noted in 168 (85.7%). Cytoplasmic Kaiso and abnormal p120ctn expressions were associated with higher degree of malignancy (high-stage and lymph node metastases, all $P < 0.05$). Abnormal p120ctn and cytoplasmic Kaiso expressions were higher in matched autologous nodal metastases than in primary growths. The lung cancer-related 5-year survival rate was significantly lower in patients who were cytoplasmic Kaiso-positive (22.9%; $P = 0.029$) or abnormal p120ctn expression (20.6%; $P = 0.001$). Multivariate analysis showed abnormal p120ctn expression was an independent factor defining the clinicopathological characters of patients. Cytoplasmic Kaiso expression was correlated with cytoplasmic p120ctn, they formed Kaiso–p120ctn complex in lung cancer tissues and cell lines. In addition, p120ctn ablation and overexpression altered Kaiso subcellular localization and protein level. Although both isoforms can regulate subcellular localization and protein levels of Kaiso, we found that only p120ctn isoform 3, but not isoform 1, directly interacts with Kaiso.

Conclusion

p120ctn and Kaiso might co-participate in the progression and lymph node metastasis of lung cancer. p120ctn regulates expression and localization of Kaiso in lung cancer cells.

Keywords

- Lung cancer
- Clinicopathological factors
- Kaiso
- p120ctn
- Metastasis

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