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Integrative Biology 2016: Neogenin expression may be inversely correlated to the tumorigenicity of human lung cancer- Yu Liu - Zhongnan Hospital of Wuhan University

Yu Liu
Zhongnan Hospital of Wuhan University, China

Despite advanced screening technology and cancer treatments available today, metastasis remains an ongoing major cause of cancer-related deaths worldwide. Typically, lung cancer is one of the cancers treatable by surgery in conjunction with chemotherapy when it is detected at an early stage.

However, it still ranks as the highest modality and mortality of cancer types in the world and this is mostly due to a recurrence of metastatic lung cancer post-resection of the primary malignancy. Lung cancer metastases predominantly occur in the liver and bone and yet the molecular mechanisms that regulate these organ-specific lung cancer metastases are largely unknown.

Therefore, the identification of any critical molecule, which triggers malignancy in lung cancer, would be an excellent target for treatment. There is growing evidence that cytoskeletal proteins and actin-based protrusions have central roles in cancer biology, particularly in metastasis. Our previous study showed neogenin, a receptor of chemotropic neuronal guidance molecule Netrin, can directly interact with myosin X, one of key filopodia regulators and regulates in myosin X movement and functions in inhibition of filopodia formation. However neogenin's relationship to tumorigenesis remains to be elucidated. We report here neogenin expression in human lung cancer samples and its association with different clinicopathologic characteristics relationship.

Immunohistochemically, compared with adjacent normal tissues, neogenin staining was significantly lower in tumor tissues ($P<0.001$). Loss of neogenin sub-cellular localization in lung cancer tissue was correlated with pathological stage, differentiation extent ($P<0.001$), but not with the age or smoking history, lymphatic invasion, vascular invasion, pleural invasion and gender ($P>0.05$).

Conversely, RGMc, one of ligands of neogenin, expression is not differential between lung cancer tissue and normal tissue. More importantly, membranous staining of neogenin was significantly correlated with a better overall survival of either stage I or stage II/III lung cancer patients and multivariate analysis confirmed that membranous expression of neogenin was an independent positive prognostic indicator ($P<0.05$). Together, these observations establish neogenin may play a role in lung carcinogenesis as well as morphogenesis and the expression may be inversely correlated with lung carcinogenicity. It is valuable as a potential prognostic factor.

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