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Caveolin-1 and VEGF-C promote lymph node metastasis in the absence of intratumoral lymphangiogenesis in non-small cell lung cancer

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ABSTRACT

Aims and background. Caveolin-1 is a key component of membrane caveolae which plays an important role in cell transformation, cell migration, metastasis and angiogenesis. The mechanism of caveolin-1 and VEGF-C in lymphatic metastasis of non-small cell lung cancer (NSCLC) is still unclear. This study aimed to define the caveolin-1 and VEGF-C expression and lymph vessel density in NSCLC and look for correlations with clinicopathological features in NSCLC.

Methods. Caveolin-1, VEGF-C, and D2-40 protein expression were assessed by immunohistochemistry in a tissue microarray constructed from 70 NSCLCs and 12 normal lungs.

Results. Caveolin-1 expression was detected in 31 of 70 (44.3%) NSCLCs, which was significantly lower than its expression in normal lungs (9 of 12, 75%; $P = 0.049$). Expression of VEGF-C was detected in 49 of 70 (70%) NSCLCs and 4 of 12 (33.3%) normal lungs ($P = 0.022$). Both caveolin-1 and VEGF-C expression were correlated with lymph node metastasis of NSCLC ($P = 0.001$; $P = 0.028$). Moreover, caveolin-1 expression was correlated with tumor stage, histological type, and differentiation grade ($P = 0.012$; $P = 0.038$; $P = 0.002$). VEGF-C expression was correlated only with histological type ($P = 0.020$). There was no correlation between intratumoral lymph vessel density and any clinicopathological parameters including lymph node status. Furthermore, there was no correlation between caveolin-1 expression, VEGF-C expression, and lymph vessel density.

Conclusions. These findings indicated a reduction of caveolin-1 expression in NSCLC and suggested that caveolin-1 as well as VEGF-C might be involved in lymph node metastasis of NSCLC. The role of caveolin-1 in lymphatic metastasis and intratumoral lymphangiogenesis in NSCLC needs further study. Free full text available at www.tumorionline.it

Key words: NSCLC, caveolin-1, VEGF-C, lymphatic metastasis, lymphangiogenesis.

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