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Lung alert

Neuropilin 1 is important in NSCLC

Neuropilin 1 (NRP1) is a neuronal receptor that mediates angiogenesis and lung branching during embryonic development and promotes tumour angiogenesis. Its role in cancer progression is not clear. This study examined the role of NRP1 in cancer invasion and angiogenesis, its signalling pathways and prognostic significance in non-small cell lung cancer (NSCLC).

Sixty consecutive patients undergoing surgery for NSCLC at the National Taiwan University Hospital were included in the study. NRP1 mRNA expression was measured from tumour samples taken at surgery, and patients were classified into high- or low-expression groups using the median value. NRP1 was stimulated using vascular endothelial growth factor 165 ($VEGF_{165}$) and inhibited using small interfering RNAs (siRNA), soluble NRP1 (sNRP1) and NRP1 inhibition peptides.

Patients in the high-expression group had shorter disease-free and overall survival times than those in the low-expression group. Inhibition of NRP1 expression using siRNA was shown to inhibit migration, invasion capability and filopodia formation of highly invasive CL1-5 NSCLC cells. Two anti-NRP1 peptides (DG1 and DG2) were shown to block NRP1 signalling and inhibit cancer invasion, tumorigenesis and angiogenesis.

To investigate in vivo effects, mice were injected with CL1-5 cells with endogenous NRP1 knocked down. They developed significantly fewer pulmonary metastatic nodules than those with CL1-5 cells with normal NRP1 expression.

The authors conclude that NRP1 is an independent predictor of cancer relapse and poor survival in patients with NSCLC, and that blockage of NRP1 signalling can suppress tumorigenesis, cancer invasion and angiogenesis. These findings demonstrate promising areas for future therapeutic research.

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