Cancer-derived exosomal miR-7641 promotes breast cancer progression and metastasis

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Abstract

Breast cancer is the most commonly diagnosed cancer in women worldwide. Despite better treatments, metastatic breast cancer remains incurable and is a major cause of cancer-related death. Cancer progression and metastasis involve multiple steps that are dependent on intercellular communication, but much remains to be understood about this process. A recent study examined one aspect of cancer cell communication: exosomes carrying microRNA (miRNA) cargoes. Researchers isolated exosomes from human breast cancer cell lines. Using cell migration and invasion assays, they found that the tumor-promoting capacity of exosomes was positively correlated to their cells of origin. The most differentially expressed miRNA was miR-7641, which could promote tumor cell progression and metastasis. Exosomal miR-7641 could promote tumor growth in a mouse model, and its levels were elevated in the plasma of patients with distant metastasis. Bioinformatics analysis of breast cancer patient data connected miR-7641 with breast cancer survival. Future studies will focus on the mechanisms by which miR-7641 regulates downstream signaling pathways for intercellular communication, but the results suggest that miR-7641 is an important cancer exosome cargo, promoting tumor progression and metastasis, thus positioning exosomal miR-7641 as a promising biomarker and potential candidate for breast cancer treatment.