Extracellular vesicles: Mediators of intercellular communication in injury and disease

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Video Byte

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Abstract

Extracellular vesicles (EVs) are key participants in cell-to-cell communication that exert various effects via the diverse molecular cargoes they carry from their parent cells. However, they also play pathological roles by carrying damage and disease signals from abnormal cells. In cancer, for example, tumor cells secrete EVs that help them evade immune surveillance and target macrophages to create a pro-tumor environment. In turn, tumor-associated macrophages release EVs that target tumor cells to enhance migration and proliferation. Notably, chemo- or radiotherapy can actually increase EV secretion, contributing to immunosuppression and cancer metastasis. In the liver, EV-mediated communication between hepatocytes and macrophages or hepatic stellate cells can exacerbate injury or disease and EV signaling can eventually contribute to insulin resistance. Furthermore, in individuals with inflammatory lung disease, EVs released from airway epithelial cells can induce either pro- or anti-inflammatory effects and lead to tissue damage and fibrosis. Although knowledge gaps remain, the existing evidence indicates that EVs are important intercellular communication mediators in injury and disease that can be leveraged to develop targeted therapies in the future.