Pericyte-derived microvesicles protect vascular function in sepsis models

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Video Byte

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Abstract

Sepsis is a life-threatening overreaction of the immune system to infection. Sepsis causes damage to vascular endothelial cells, which play an important role in maintaining vascular function. Treatment strategies that restore vascular endothelial cell function after sepsis are desperately needed. Pericyte-derived microvesicles (PMVs) have had therapeutic effects in other disorders and may be useful in sepsis treatment. To evaluate the potential treatment utility of PMVs, researchers combined experiments in rats and cultured vascular endothelial cells. PMVs were able to protect lung tissue and improve pulmonary function of septic rats. PMVs were also protective of cellular function in the cell culture model. Through subsequent experiments, the researchers determined that PMV absorption was mediated by the cell-surface protein CD44, and that PMVs restored vascular function by delivering the signaling molecule CTGF and activating the ERK1/2- STAT3 pathway. These results suggest that PMVs have a protective effect on vascular endothelial function. More research in humans and other models is needed, but building on these results could lead to new sepsis treatments.