Protecting transplanted lungs

February 13 2018, by Leigh Macmillan

Primary graft dysfunction (PGD)—acute lung injury that develops within 72 hours of lung transplantation—is a major cause of illness and death after transplant. The mechanisms leading to PGD are not well understood, and there are no specific therapeutic interventions.

Ciara Shaver, MD, Ph.D., Lorraine Ware, MD, and colleagues, explored the role of cell-free hemoglobin (normally located inside red blood cells) in PGD.

The investigators found that elevated preoperative cell-free hemoglobin was associated with increased risk of PGD in lung transplant patients. In isolated human lungs and cultures of pulmonary endothelial cells (the cells that line blood vessels), they showed that cell-free hemoglobin increased vascular permeability, or "leakiness."

Treatment with acetaminophen, a drug that counters the oxidizing action of hemoglobin, prevented the increased permeability in isolated lungs and cultured cells.

The findings, reported in JCI Insight, suggest that cell-free hemoglobin contributes to PGD by increasing vascular permeability and that acetaminophen may be a novel treatment to prevent PGD.

More information: Ciara M. Shaver et al. Cell-free hemoglobin promotes primary graft dysfunction through oxidative lung endothelial injury, *JCI Insight* (2018). DOI: 10.1172/jci.insight.98546

Provided by Vanderbilt University