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Role of Urinary Exosomal microRNAs as Biomarkers for Early Detection of Acute Kidney Injury in Critically Ill Patients

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Acute kidney injury (AKI) is a common and serious complication in intensive care units, often diagnosed late by serum creatinine changes. Urinary exosomal microRNAs (miRNAs) have emerged as potential non-invasive biomarkers reflecting renal injury at early stages. This study profiled miRNA expression in urinary exosomes from 80 critically ill patients to identify AKI-specific signatures. Using qRT-PCR, miR-21, miR-146a, and miR-155 were significantly elevated in patients developing AKI within 48 hours compared to controls. Receiver operating characteristic analysis showed these miRNAs had high diagnostic accuracy (AUC >0.90). Integration of miRNA levels with clinical parameters improved early AKI prediction. Urinary exosomal miRNAs represent promising biomarkers for timely AKI diagnosis, enabling earlier intervention to improve outcomes.

Biography

Priya Nair's research interests include biomarker discovery and renal pathophysiology. She has published extensively on molecular diagnostics in kidney diseases and leads ongoing projects on non-invasive biomarkers for AKI.