

## **Identification of a Previously Unrecognized Biomarker of Contrast Induced Nephropathy**

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**Introduction:** Contrast induced nephropathy (CIN) is the third leading cause of hospital acquired Acute Kidney Injury (AKI), accounting for 10-15% of AKI in hospitalized patients. Earlier, more sensitive biomarkers that could be detected through a simple urine test would make it more feasible to screen all patients undergoing procedures involving contrast administration to determine their risk for CIN. This would allow for the commencement of prophylactic treatments and closer monitoring in the days following contrast administration.

**Hypothesis and Aims:** We conducted a cross-sectional study in children undergoing elective cardiac catheterization. We identified a 4631 Da protein that appears in the distinct pre-procedural urinary proteomic profile in subjects who subsequently develop CIN. Based on the literature and our previous results, we hypothesized that this protein is an amino acid variant of human beta-defensin-1, an antimicrobial peptide that is a component of the innate immune response.

**Methods:** In this study, we used surface-enhanced laser desorption/ionization time-of-flight mass spectrometry (SELDI-TOF-MS) to analyze urine from children undergoing contrast administration. Upon identifying the presence of the 4631 Da peak, the urine was exposed to anti-HBD-1 coated beads and again subjected to SELDI to determine if this marker was a variant of human beta defensin-1.

**Results:** In pre-procedural urine, the 4631 Da protein was bound by the antibody with significant intensity relative to known amino acid variants of HBD-1.

**Conclusion:** Continuation of ongoing urinary biomarker studies will be needed to validate HBD-1 variants as markers of CIN and to discover and identify additional biomarkers for this potentially devastating condition.