

Technology Offer

Urinary Calprotectin as Biomarker for intrinsic acute kidney injury

Ref. No.: CH574

Background

Acute kidney injury (AKI) is a severe problem which is associated with a rapid loss of kidney function and affecting 1 to 5% of all hospitalized patients. AKI can be classified into pre-renal, intrinsic- and post-renal AKI according to its origin. In pre-renal AKI, renal function gets lost due to e.g. volume depletion or hypotension. Intrinsic causes such as acute tubular necrosis, interstitial nephritis, glomerulonephritis and vasculitis can lead to intrinsic AKI. Post-renal AKI is often caused by urinary tract infections and can easily detected by ultrasound. The differentiation between pre-renal and intrinsic AKI however can be difficult. Until now, no reliable marker has been identified. The prognosis of AKI depends on early diagnosis and immediate onset of therapy. Intra-renal causes requires an immediate biopsy to avoid a delay in therapy start. A reliable marker differentiating between intrinsic and pre-renal AKI would shorten time to therapy initiation and would prevent unnecessary biopsies in prerenal diseases.

Technology

Urinary Calprotectin, a mediator protein of the innate immune system, has been identified as a biomarker for the differentiation between intrinsic and pre-renal acute kidney injury. In a cross-sectional study with 101 subjects including 86 patients with AKI (34 pre-renal, 52 intrinsic), and 15 healthy controls, the median calprotectin concentration in the urine of the intrinsic AKI patient group was 60 times higher (1692 ng/mL) than in the pre-renal AKI group (28 ng/mL). Urinary calprotectin levels from pre-renal patients were not significantly different from healthy controls (45 ng/mL). Using a cut-off level of 300 ng/mL Calprotectin leads to a test sensitivity of 92,3% and a specificity of 97,1% within the used study population.

Benefits

- ✓ Reliable non-invasive test
- ✓ Lateral-flow test or Elisa possible

Application

Differential diagnosis of acute kidney injury (pre-renal vs. intrinsic)

Commercial Opportunity

In-licensing or industrial cooperation for further development

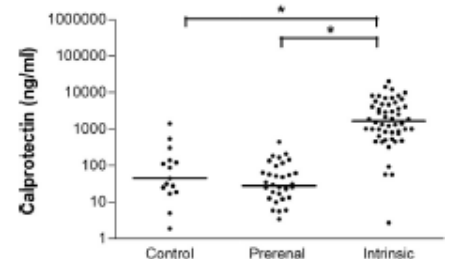


Fig. 1: Urinary Calprotectin concentration is significantly higher in intrinsic AKI patients than in pre-renal AKI and controls ($P < 0,001$ each)

Key words

Calprotectin, acute kidney injury, intrinsic acute kidney injury, biomarker, urine

Developmental Status

Patient data

IP Status

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EP patent granted (08/2017),
Validated in: DE, GB, F, NL

Publication

<https://register.epo.org/espacenet/regviewer?AP=12717075&CY=EP&LG=en&DB=REG>

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