

## **Improvement in clinical outcomes when handling critical patients using NephroCheck® test- A pilot study in Chile**

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Background: The diagnosis of acute kidney injury (AKI) is based on urine output and GFR, two markers of kidney function. This definition has been challenged in recent years, since the usage of two novel urine markers: TIMP-2 IGBP-7, described to correlate with kidney injury progression, even before serum creatinine (sCr) is affected. These markers are available for IVO under the name of NephroCheck® (NC) test. Nonetheless, there's still a gap in clinical adaptation and interpretation of these markers as well as a lab opportunity to deliver results when needed. Currently, there's no evidence of clinical usage of NC in Latin America. In Chile we started a patient study to develop local experience for proper clinical usage of this test.

Objective: Determine the clinical utility of the NephroCheck test in Chilean population to assess and help to prevent AKI in critical patients and standardize clinical behaviors adopted in ICU based upon results.

Methods: We developed a testing profile for every admission in ICU, including the urine NC test and sCr both run in VITROS 5600 systems from Ortho Clinical Diagnostics Inc. NC risk scores of developing AKI in next 12h are: <0.3 low risk, 0.3 - ≤ 2.0 moderate risk and > 2.0 high risk. Two groups were defined, according to NC scores: Group A >0.3 and Group B ≤ 0.3. Both groups were treated with the same nephroprotective behaviors from AKI bundle, driven by NC results (Table 1).

Kidney failure was diagnosed based on KDIGO criteria. Patient clinical data was retrieved from HIS. Patients having Chronic Kidney Disease at any stage, more than 85 years, >100 kg or <55 kg, liver disease with a Child-Pugh score Class B or 1.5 times above normal limit of transaminases, pregnancy and lactation and/or under treatment using COMT or MAO inhibitors were excluded. Data analysis was performed using SPSS v 13.0.

Results: A total of 26 patients were included in the study ( $55.2 \pm 18.3$ , male 46.2%). The distribution per admissions were: septic shock 34.6%, post-surgery 19.2%, and nephrotoxic intake 33.5% (Table 2). No significant differences were observed in age distribution between groups (A:  $54.1 \pm 14.1$  vs B:  $55.9 \pm 20.7$ ,  $p=0.8$ ), neither in average basal sCr values at admission in ICU: (A:  $0.86 \pm 0.53$  v/s B:  $0.71 \pm 0.30$  mg/dl;  $p=0.36$ ). SOFA (Sequential Organ Failure Assessment) score revealed group A contained more severe patients (A: 5.45 vs B: 2.73;  $p=0.02$ ). (Table 3) In group A, 27.3% of the patients (3) developed AKI. Only 9.1% developed AKI stage 2/3. Only 5.7% evolved to AKI stage 1 in group B.

Conclusions: The adoption of NC in ICU plays a key role in patient's outcome while in ICU stay, since none of studied cases required Renal Replacement Therapy (RRT), neither dialysis nor High volume hemofiltration (HVH). Nephro protective behaviors were adopted at an earlier stage, compared to sCr guided decisions, reducing the incidence of AKI from 40% to 27.3% in our ICU, according to historical records.