BIOMARKER IN ACUTE KIDNEY INJURY IN NEWBORNS

Naunova Timovska Silvana
University Children’s Hospital, Skopje, R. Macedonia

Background and Aim

Acute kidney injury (AKI) is a common clinical problem in newborns. Predisposing factors associated are certain clinical conditions, therapeutic interventions and other nephrotoxic drugs. Urinary NGAL can predict AKI in neonates admitted to NICU. The aim of the study is to determine the incidence, risk factors and the efficiency of biomarker NGAL in early diagnosis of neonatal AKI.

Method

The study was designed as a prospective, clinical, epidemiological investigation conducted in the period of 3 years, which included 100 newborns hospitalized in NICU of University Children’s Hospital. Medical data records of admitted neonates with AKI were analyzed. NGAL was applied for the first time in this study.

Results

The estimated prevalence of AKI in neonates was 6.4%, while the prevalence according to RIFLE classification was 8.7%. Perinatal asphyxia was a common predisposing factor associated to neonatal kidney injury. The mortality rate was 32% and was significantly higher in the group of newborns with congenital heart diseases.

We have detected significantly higher values of NGAL on the day of admission compared to creatine (Cr) values, and a slight upward trend, with further increase in the third day after admission. This finding indicates that the NGAL is a sensitive marker in the diagnosis of kidney injury.

Conclusion

AKI is a life threatening condition with still high mortality. It is an independent contributor to mortality.

NGAL is an early predictive biomarker of AKI in critically ill newborns. It provides an early diagnosis of kidney injury in the first hours of its occurrence, when the disease is not clinically manifested.

That is why we propose its wider application in sick infants with different clinical conditions hospitalized at the NICU as an early marker for the diagnosis of AKI.

Graf 1. NGAL’s monitoring on the day of hospitalization and three days later

There was a significant difference between NGAL values in newborns with AKI and lethal outcome and newborns without lethal outcome ($p<0.001$).

This finding suggests that the level of uNGAL significantly correlates with the severity and outcome of the disease.

Graf 3. NGAL values in newborns with AKI and lethal outcome and newborns without lethal outcome