Urinary biomarkers as predictors of AKI in COVID-19 hospitalized patients with pneumonia

[a]Rizo-Topete L, [a]Enriquez-Noyola R, [o]Camacho-Ortiz A
[a]Nephrology Dept, [o]Infectology Dept; Hospital Universitario "Dr. José Eleuterio Gonzalez" UANL.

Background: The COVID-19 disease manifests in most cases as a lower respiratory tract infection. COVID-19 enters the human body using angiotensin-converting enzyme 2, this could be significant in many ways: acute kidney injury (AKI), as well as proteinuria, and/or microhematuria could be associated with penetration of the virus into cells.

The use of microalbuminuria as a marker for AKI was shown in an animal model and correlated with other markers. However, there are few studies that have validated its usefulness as a marker for AKI.

NGAL has been tested in multiple studies of patients at risk of acute kidney injury (AKI) due to sepsis, cardiac surgery, exposure to contrast media, or after kidney transplantation.

The most frequently reported causes of admission to the intensive care unit in patients with COVID-19 are hypoxemic respiratory failure that requires invasive mechanical ventilation or hypotension that requires support with vasoactive amines. Data on AKI are scarce since they only report on incidence in these patients.

Methods:
A prospective observational study. Patients who came to the area for COVID-19 were recruited. Upon admission, a urine sample was analyzed with Getein 1100, by quantitative immunofluorescence to determine levels of microalbuminuria and NGAL in 50 patients with creatinine <1.0. All patients had high oxygen requirements (> 5 liters/minute). All patients who had a positive PCR test for SARS CoV-2 were included and patients with a history of chronic kidney disease, urinary symptoms, underlying urological disease or complications of Diabetes or hypertension were excluded. Laboratories were collected at admission and 5 days after admission to compare with initial Ngal and microalbuminuria levels.

Results:
The association of the variables was analyzed using the Spearman correlation coefficient, since they are continuous variables. It was found that an elevation of creatinine at day 5 and an initial Ngal> 200 and microalbuminuria >30 have a moderate correlation (rho = 0.46) with a p <0.05, and a low correlation (rho = 0.28) and a p <0.05, respectively.
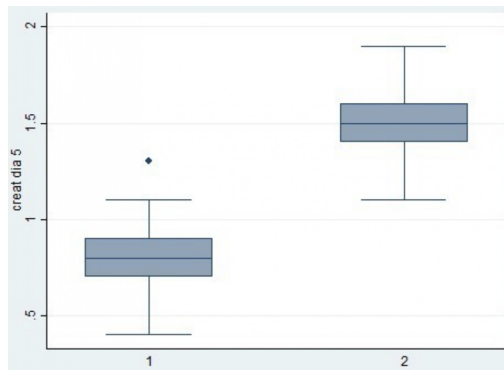

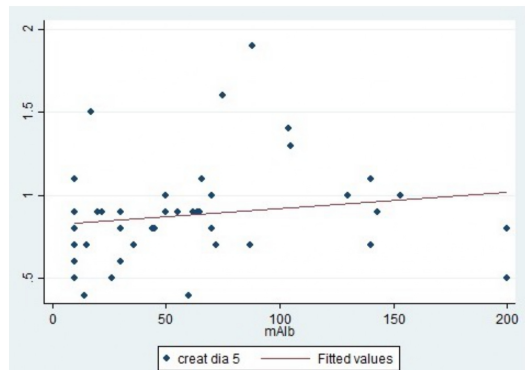Fig1. Correlation of Ngal >200 and creatinine leves at day 5.

Fig2. Correlation of mAlb leves and creatinine at day 5.

Conclusion:
Although there is no ideal biomarker for acute kidney injury, current biomarkers can significantly predict the development of acute kidney injury, especially in critically ill patients. With the emergence of COVID-19 disease, it is necessary to be able to prevent and treat acute kidney injury on time, in order to reduce the morbidity and mortality of these patients. In this study, it is observed that 2 biomarkers have a significant correlation to predict acute kidney injury, and it is necessary to have more availability of these biomarkers to detect it on time

39th Vicenza Course on AKI & CRRT
VIRTUAL MEETING
OCTOBER 26-29, 2021