

Cystatin C and neutrophil gelatin-associated lipocalin (NGAL) can predict acute kidney injury and in-hospital mortality in COVID-19 patients

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Background: Prediction and early diagnosis of Acute Kidney Injury (AKI) in critically ill Coronavirus disease 2019 (COVID-19) patients are of great importance. Therefore, use promising renal biomarkers such as cystatin C and Neutrophil Gelatinase-Associated Lipocalin (NGAL) to identify the risk of future AKI.

Materials and methods: A total of 89 adult patients with COVID-19 were included in this study. Serum cystatin C and NGAL concentration were assessed on Intensive Care Unit (ICU) admission then repeated after 48 hours. Serum creatinine was followed for 7 days to report the development of AKI.

Results: Several 28.1% of COVID-19 patients developed AKI. However, serum creatinine was not significantly different between the AKI group and the non-AKI group ($p=0.375$), admission Cystatin C ($p=0.018$), and NGAL ($p<0.001$) were significantly different between both groups. After 48 hours, a change in Cystatin C level ($p<0.001$) but not NGAL ($p=0.4$) was a predictor for AKI. Logistic regression model including age ($p=0.031$), Cystatin C on 48 hrs ($p=0.003$) and NGAL on admission ($p=0.015$) could predict AKI in COVID-19 patients.

Conclusion: Serum cystatin and NGAL in ICU could be used to predict AKI in COVID-19 patients. A logistic regression model including age, Cystatin C on 48 hrs, and NGAL on admission might be a tool for individualized risk estimation of AKI in COVID-19 patients.

Keywords: Cystatin C, NGAL, Acute kidney injury, COVID-19, In-hospital mortality.

Biography

Ashraf A Elmaraghy is an Associate Professor of Chest Medicine from 2016 till now at the Chest Department of Ain Shams University. He is a Member of Ain Shams University Medical Society, Member of the Egyptian Society of Chest Diseases and Tuberculosis, Member of the Egyptian Scientific Society of Bronchology, Member of the Ain Shams University Hospitals Committee for Combating Corona Virus, Member of the World Association for Bronchology and Interventional Pulmonology (WABIP). His Field Experience and Activities is Assistant director of Chest Unit, Ain Shams University Specialized Hospital 2002–2003, Assistant director of Chest ICU, Ain Shams University Specialized Hospital 2004, Coordinator of the weekly scientific seminar, Chest Department, Ain Shams University from 2009–2010, Director of Pulmonary Intensive Care Unit, Ain Shams University Hospital from March 2013 to March 2014, Coordinator of Post graduate semester exams (Master, Diploma, and MD) from 2015 till now, Pulmonary consultant at Respiratory Care Center from 2012 till now, Senior supervisor of Chest Unit and Intermediate Care Unit at Ain Shams Obour Specialized Hospital for treatment of Corona Virus Disease from April 2020 till now, Member of the committee for updating Ain Shams University Guide for Management of Corona Virus Disease, Vice manager of Bronchology Unit, Ain Shams University Hospital.

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