Analysis of biological biomarkers in COVID-19 and their role in severity and clinical progression

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Biological markers play a crucial role in assessing the prognosis of COVID-19 patients, particularly in severe cases. Interleukin-6 (IL-6), along with other inflammatory and cardiac biomarkers, may help identify patients at high risk of severe complications.The aim of this study is to evaluate the relationship between biological markers measured at admission and the clinical outcomes of COVID-19 patients.

Materials and Methods: This retrospective study was conducted at the Immunology Laboratory of Abderrahmen Mami Hospital in Ariana, covering the period from September 2020 to January 2022. It included hospitalized COVID-19 patients. Data collected at admission included IL-6, CRP, D-dimers, troponin, and BNP levels. Patients were categorized based on the clinical severity of their disease (moderate or severe forms) and their clinical outcomes (survival or death).

Results: A total of 155 patients were included, with a mean age of 62.8 ± 12.1 years and a sex ratio of 2.3. Analysis showed that the mean IL-6 level at admission was significantly higher in patients with severe forms (93.7 ± 32 pg/mL) compared to those with moderate forms (16.4 ± 7 pg/mL, $p < 0.05$).Additionally, elevated CRP (143 ± 48.9 mg/L) and D-dimer levels (24 ± 3 μg/mL) were observed in patients with severe disease and in those who died ($p < 0.01$). Mortality was also significantly associated with increased BNP (87.3 ± 24 pg/mL) and troponin (0.81 ± 0.23 ng/mL) levels.

Conclusion: Our study highlights a significant correlation between elevated biological markers, particularly IL-6, CRP, and D-dimers, and poor prognosis in COVID-19 patients. These findings emphasize the importance of assessing these biomarkers at admission to stratify risk and optimize early management.

Biography

Najla Ghrairi is an Associate Professor at the Faculty of Medicine of Tunis, specializing in Immunology and Medical Biology. She has made significant contributions to research, teaching, and clinical practice. She is a dedicated educator, actively involved in undergraduate and postgraduate medical training, and serves as a mentor and jury member for national medical exams. Her research focuses on tumor markers, immunopathology, and allergic diseases, with several publications in peer-reviewed journals. Beyond academia, she is an entrepreneur in e-health and artificial intelligence, leading the development of an innovative healthcare application. She is also an active participant in medical committees, contributing to quality assurance, ethics, and transfusion safety. Despite her demanding career, she balances professional and personal responsibilities, being a mother of two. Passionate about scientific advancement, she continuously strives to enhance medical knowledge and patient care.