

The role of biomarkers in diagnosis of COVID-19 – A systematic review

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Abstract:

As of the 28th April 2020, the COVID-19 pandemic has infiltrated over 200 countries and affected over three million confirmed people. We review different biomarkers to evaluate if they are able to achieve an earlier diagnosis, predict clinical outcomes and correlate with the severity of COVID-19 disease.

Materials and Methods

A literature search was conducted using electronic search engines and databases. Keywords to refine the search included 'COVID-19', 'SARS-CoV2', 'Biomarkers' among others. Exclusion criteria were primarily studies with no particular definition of role of biomarkers in COVID-19. Only relevant articles are cited for each section.

Results

Thirty-four studies were deemed relevant, which reviewed multiple biomarkers. Of these C-reactive protein, serum amyloid A, interleukin-6, lactate dehydrogenase, neutrophil-to-lymphocyte ratio, D-dimer, cardiac troponin, renal biomarkers, lymphocytes and platelet count levels were highlighted as key markers of COVID-19 infection. There were significantly higher levels of these biomarkers in patients dealing with severe COVID-19 infection barring two. Platelet count and neutrophil-to-lymphocyte ratio were seen to be significantly decreased in severe infections. Out of all of the biomarkers changes in C-reactive protein, D-dimers and platelet count were shown to be strongly associated with mortality.

Conclusions

Biomarkers are a necessity of monitoring clinical care, but research is still in the early stages of the COVID-19 outbreak. The most useful biomarkers from early research seem to be C-reactive protein, D-dimer and platelet count. Although many studies produced reproducible findings, there is a pressing need for further research into biomarkers with larger sample sizes across several centres is required for definitive conclusions on whether biomarkers that have prognostic value.



Biography:

Muhammed Kermali is currently working at a Faculty of Medicine, Medical Student at St George's, University of London, London, UK

Speaker Publications:

1. Professionalism in medical students: what actually makes a difference?, *Journal of Advance in medical education and practice*, 14 August 2019 Volume 2019:10 Pages 635—636
2. How effective is team-based revision? An insight from medical students, *Journal of Advance in medical education and practice*, 12 September 2019 Volume 2019:10 Pages 815—816
3. COVID-19: The heart of the issue, *Journal of cardiac surgery* 16 June 2020, DOI: 10.1111/jocs.14596
4. The role of biomarkers in diagnosis of COVID-19 – A systematic review, *May 2020 Life Sciences* 254:117788, DOI: 10.1016/j.lfs.2020.117788

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