Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Interpreting serum procalcitonin in COVID-19 patients undergoing renal replacement therapy

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We read with interest the article by Heesom et al. on the use of procalcitonin (PCT) for antimicrobial stewardship in patients with COVID-19 (coronavirus disease 2019) [1]. The data demonstrated that PCT was useful in guiding the duration of antibiotics for patients with concomitant bacterial infection.

Approximately 5% of COVID-19 patients require renal replacement therapy (RRT), including haemofiltration and dialysis protocols [2]. We are interested in the effect that this may have on the interpretation of PCT in this patient group.

Serum PCT levels may be affected by RRT, as the molecular weight of PCT is ~13 kDa and haemofiltration can remove molecules with molecular weight of up to 50 kDa [3]. This is particularly likely with higher flux membranes that have larger pore sizes and aim to remove larger molecules, including inflammatory mediators.

There is evidence that suggests PCT is removed from the serum via continuous venovenous haemofiltration (CVVHF) [4]. There are likely to be several influencing factors, including attenuation of the inflammatory response due to direct removal of cytokines or infective stimulus reduction by successful antibacterial therapies. Even allowing for these factors, it is thought that CVVHF is responsible for at least a portion of the serum PCT decrease [5]. Furthermore, the degree of PCT removal appears to be dependent on the membrane used, with a greater effect noted with high-flux membranes [6].

In conclusion, evidence to date suggest that PCT is removed by RRT, however the extent of this effect on the serum PCT level is unclear. There is plausibly a risk that interpretation of serum PCT could lead to underestimation of concurrent bacterial infection in those on RRT.

Pre-test probability remains a challenge in the context of treating COVID-19 patients who may have superimposed bacterial infection owing to similarities in clinical presentation and the effect of COVID-19 on other biomarkers of infection. This could lead to an over-reliance on PCT, highlighting the need for further research to improve the confidence with which clinicians can use this marker.

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Ethical approval

Not required.

Competing interests

None declared.

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