

Letter

Anti-inflammatory effects of the antibiotics ceftazidime and tobramycin in porcine endotoxin shock: are they really anti-inflammatory? Authors' response

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We would like to thank Dr Wiedermann for his interest in our paper [1].

It is well established that IL-6 has been associated with anti-inflammatory properties, as pointed out by Dr Wiedermann. Although not a proinflammatory cytokine, IL-6 is produced by several cells as a result of previous stimulation by tumour necrosis factor (TNF)- α and IL-1. Therefore, the concentration of IL-6 has been considered to be a marker of the inflammatory reaction, as well as the preceding TNF- α and IL-1 responses, and in several studies it was shown to correlate with prognosis in patients with severe sepsis and septic shock [2–4]. Furthermore, persistently elevated levels of IL-6 have been associated with the development of multiple organ dysfunction syndrome [5].

The primary end-point of our study was to investigate whether the biological effects of endotoxin, as measured using TNF- α and IL-6 responses, could be neutralized by antibiotics. The early peak cytokine response after 1 hour (for TNF- α) and 2 hours (for IL-6) was chosen because both antibiotics *in vitro* had been shown to induce protection against oxidative injury, which induces an inflammatory response that might influence the results. A secondary end-point was whether the antibiotic treatment could affect cytokine concentrations in an animal model. The lower concentration of IL-6 during the last period of the experiment might be consistent with a reduction in oxidative stress and a concomitant proinflammatory response. In comparison with IL-6, the TNF- α response is often of lesser magnitude and of more transient character, which increases

the statistical β error and makes it more difficult to demonstrate a reduction even if there is one.

It was emphasized that our data did not rule out other mechanisms. However, even if IL-6 does not have proinflammatory properties *per se*, then the most likely explanation was that IL-6 indicated the presence of an inflammatory response and that the reduction in IL-6 represented an anti-inflammatory effect caused by tobramycin and ceftazidime.

Competing interests

None declared.

References

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