

# Changes in procalcitonin and presepsin before and after immunoglobulin administration in septic patients

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**Introduction** The potentially envisaged actions of intravenous immunoglobulin (IVIg) on severe infectious disease include: virus or toxin neutralizing action; opsonic effect; complement bacteriolytic activity; and enhancement of sensitivity to antibiotics. In the case of severe infectious disease, antibiotics are often supplemented with administration of IVIg.

**Methods** The changes in sepsis markers (procalcitonin, presepsin, interleukin-6, C-reactive protein) followed by IVIg administration were investigated in severe sepsis or septic shock patients. The subjects were 410 patients admitted to an ICU with a diagnosis of severe sepsis or septic shock and from whom informed consent had been obtained for the present study. IVIg was administered intravenously for 3 days (5.0 g/day) and measurements were undertaken before administration (day 1), on the day after completion of administration (day 4), and on day 7. The items measured were procalcitonin, presepsin, IL-6, and CRP. The effect of IVIg administration on these markers was then studied. The IVIg studied was polyethylene glycol-treated human immunoglobulin injection fluid (2.5 g, 50 ml, one vial).

**Results** The patient APACHE II score were  $24.9 \pm 8.2$ , the SOFA score  $9.1 \pm 3.7$ , and the survival rate after 28 days 83.4%. The values before IVIg administration were: procalcitonin  $36.0 \pm 463.3$  (median 110) ng/ml, **presepsin  $4,548 \pm 4,250$  (median 3,337) pg/ml**, CRP  $15.6 \pm 9.6$  (median 14.7) mg/dl, and IL-6  $13,860 \pm 47,299$  (median 630) pg/ml. All values were thus elevated. On the days after the completion of IVIg administration and on day 7, the level of almost all mediators (procalcitonin, presepsin, CRP, IL-6) decreased significantly. **In patients with suspected severe sepsis and septic shock, presepsin reveals valuable diagnostic capacity to differentiate sepsis severity compared with procalcitonin, IL-6, CRP, and WBC. Additionally, presepsin and IL-6 reveal prognostic value with respect to 30 days and 6 months all-cause mortality throughout the first week of ICU treatment [1].**

**Conclusion** The results of the present study found significant decreases of procalcitonin, presepsin and IL-6 resulting from 3 days of immunoglobulin administration, but evidence is still limited and this needs to be confirmed in larger studies.

## Reference

1. Behnes M, Bertsch T, Lepiorz D, et al. Diagnostic and prognostic utility of soluble CD 14 subtype (presepsin) for severe sepsis and septic shock during the first week of intensive care treatment. *Crit Care*. 2014;18:507.