

High serum procalcitonin concentration and dynamics of its changes as a prognostic factor of mortality

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Sir,

Procalcitonin (PCT) is a recognised biomarker for diagnosis and monitoring of the efficacy of sepsis treatment. The first reports regarding its usefulness were published in 1993, when the correlation between increased PCT concentrations in blood and the severity of bacterial infections was described in children [1]. Under physiological conditions, the blood concentration of PCT is low, i.e. $< 0.1 \text{ ng mL}^{-1}$. Elevated concentrations of PCT are found in patients with on-going bacterial infections. In such cases, the concentration of PCT increases within 3–4 hours to reach its maximum value after 6–12 hours. A half-life of PCT in blood is 20–24 hours and its blood level is associated with enhanced inflammatory response, as well as the efficacy of antibiotic therapy [2].

A 35-year-old male patient was admitted to the Emergency Department with disorders of consciousness resulting from a generalised epileptic fit. His medical history revealed only alcoholic disease. The patient's general condition was assessed as severe; a physical examination demonstrated disorders of consciousness (Glasgow Coma Scale score — 10), hypotension (80/50 mm Hg), tachycardia (120 min^{-1}), elevated temperature (37.6° C), and a soft, left-side neck tumour. Computed tomography of the head and neck demonstrated fluid areas with possibly purulent lesions. Considering his deteriorating condition and results of additional examinations, the patient was admitted to hospital.

Immediately after admission, the patient developed sudden cardiac arrest in the mechanism of asystole preceded by increasingly severe disorders of consciousness and progressive hypotension. Thanks to the resuscitation procedures undertaken, the heart action was restored; however, the infusion of noradrenalin was necessary. The patient did not regain consciousness and spontaneous respiratory drive. Due to phlegmon of the neck soft tissues, the patient was qualified for surgical decompression of purulent foci, which was performed under general anaesthesia.

Instantly after surgery, the patient was transported to the ICU where sedation (RASS, *Richmond Agitation-Sedation Scale* [–4]), mechanical lung ventilation, (FiO_2 0.5; PEEP 8 cm H_2O), and an infusion of catecholamines were continued (Fig. 1). Empiric broad-spectrum antibiotic therapy was instituted. Since the features of kidney damage intensified, continuous venovenous haemodiafiltration was applied with the use of an OXIRIS set (Gambro Industries, Meyzieu, France). The cardiovascular parameters were corrected based on haemodynamic monitoring using the EV1000 clinical monitoring platform (Edwards Lifesciences Corporation, USA).

On ICU admission, his Acute physiology and Chronic Health Evaluation (APACHE II) score was 38 and Sepsis-related Organ Failure Assessment (SOFA) score was 18, which was associated with the risk of death of 85% and $> 90\%$, respectively. Moreover, an extremely high procalcitonin concentration on admission, i.e. $673.76 \text{ ng mL}^{-1}$ seemed also prognostically unfavourable.

The treatment applied resulted in a gradual improvement of the patient's condition. The serum concentration of PCT was significantly reduced, being $261.66 \text{ ng mL}^{-1}$ on day 2; 121.7 ng mL^{-1} on day 3; 37.69 ng mL^{-1} on day 4; 3.3 ng mL^{-1} on day 10, and 0.59 ng mL^{-1} on the last day of ICU treatment. On day 7, renal replacement therapy was discontinued and

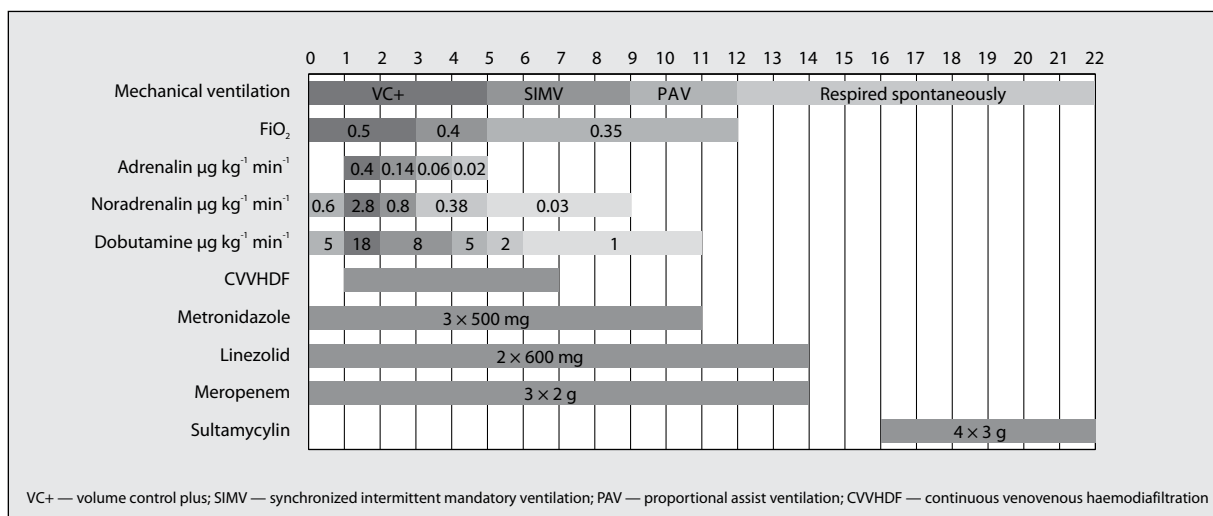


Figure 1. Selected elements of therapy in ICU

renal function significantly improved. On day 12, artificial ventilation was discontinued and the endotracheal tube was removed. On day 30, the patient, now conscious, in logical contact and enterally fed, was transferred to the Department of Otolaryngology. One year after the completion of treatment the patient resumed his professional activities.

High concentrations of PCT in patients treated for septic shock have been well documented in the literature; however, in the majority of cases they correlated with ICU mortality [3–5]. Single reports have also described high concentrations of PCT in patients intoxicated with amphetamine [5]. In our case, a high concentration of PCT on day 1 of hospitalisation might have suggested an unfavourable prognosis. A relatively quick improvement of the patient's general condition and significantly reduced concentrations of PCT during the first days of treatment did not confirm the correlation between high PCT levels and mortality. Analysis of the dynamics of PCT changes during treatment appears to be more specific. Some studies have emphasised a substantially higher correlation between the kinetics of PCT changes during the first days of treatment and the mortality of patients treated for septic shock [6–9]. In our case, reduced concentrations of PCT were observed during the first 72 hours of treatment. Therefore, it can be assumed that monitoring of the dynamics of PCT changes is a sensitive prognostic factor in patients treated for septic shock. Nevertheless, further studies are needed to demonstrate the sensitivity of changes explicitly.

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Tips and troubleshooting during intubation with AirTraq videolaryngoscope

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Editor,

The AirTraq optical laryngoscope (Podol Meditec SA, Vizcaya, Spain) is an intubation device which can be successfully used both in cases of expected [1] and unexpected [2] difficult intubation. However, in some cases it may be difficult to introduce an endotracheal tube despite good

visualisation of the glottis [3, 4]. In such cases the use of an intubation stylet [4] or a gum elastic bougie [3] is described. However, it may be barely possible to position an endotracheal tube (ET) with a stylet when in the guide channel of the AirTraq. Anaesthesiologists sometimes try to change the tube position like when using a standard Macintosh laryngoscope blade. This is not possible due to the design of the AirTraq's guide channel for an ET. If manoeuvres are necessary, they must be done with the device itself, not the ET. If the glottis is beyond the centre of view and device positioning does not improve visibility, the use of a gum elastic bougie may help [5, 6]. The gum elastic bougie should be introduced into the guide channel of the AirTraq instead of the ET. Because of its smaller diameter, it is possible to