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Hypotension and the evolution of bacteremia-induced acute kidney injury in the intensive care unit

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Sepsis has been found to be a leading contributing factor in acute kidney injury (AKI) during critical illness. In patients with sepsis, prerenal factors significantly contribute to AKI. Despite optimal hemodynamic monitoring, rapid hemodynamic resuscitation and intravascular volume restoration, certain patients remain hypotensive. We examined the impact of hypotension on the evolution of AKI in septic patients. Therefore, we focused on the role of hypotension as the principal objective and examined: 1) The influence of hypotension during sepsis, 2) the influence of proven sepsis to failure and 3) the influence of hypotension on the evolution to failure. Patients were divided into four groups based on their RIFLE classification on the day of positive blood stream infection (BSI) detection. Between all groups, there was no difference in the delay of antibiotic treatment, episodes of septic shock or the total number of days in septic shock. In total, 75% of the study population evolved to AKI during their ICU stay and most patients evolved to failure. There was no significant difference between patients with Gram-positive or -negative infection in the occurrence of hypotension, the duration of hypotension or the number of periods of hypotension. After BSI, the probability for a patient to be in failure is significantly higher than before BSI (OR=1.94, p=0.0276). Patients have a significantly higher risk of evolving to failure if the duration of severe hypotension is longer (OR=1.02 for 10 minutes increase in duration of hypotension is, p=0.0472). In our population of septic patients, a cut-off of at least 51 minutes of severe hypotension (<65 mmHg (sens=0.55, spec=0.68)) or at least 5.5 periods of severe hypotension within 1 day was determined to identify patients with increased risk of evolving to failure. This study underscores the observation that low mean arterial pressure levels are associated with a higher incidence of AKI in septic patients.

Biography

Karin Janssen van Doorn has completed her PhD in Medical Sciences at the University of Antwerp and Brussels (Belgium) and has a Master's in Ethics. She has 20 years of clinical experience in Nephrology, with special interest in Acute Kidney Injury and Intensive Care. At present, she is Clinical Assessor for the Belgian Federal Agency for Medicines and Health Products. She has published more than 20 papers in reputed journals and is an alternate member of the Scientific Advisory Working Party of the European Medicines Agency in London.

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