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Obesity and acute kidney injury: fact or artifact?

Accepted: 7 August 2010
Published online: 24 September 2010
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An author's reply to this comment is available at:
doi:[10.1007/s00134-010-2033-z](https://doi.org/10.1007/s00134-010-2033-z).

Dear Editor,

We read with interest the article of Druml et al. [1] in which the authors argue that obesity is an independent risk factor for developing acute kidney injury (AKI) and that, in contrast to the usual bad prognosis for intensive care unit (ICU) patients with AKI, the risk-adjusted hospital mortality rate in their study was lower in obese than in non-obese patients. In their study, AKI was established following the RIFLE F class criteria, in accordance with the recent International Consensus Conference recommending the RIFLE criteria for the diagnosis of AKI [2]. RIFLE criteria as well as the closely similar AKIN criteria are based on increased creatinine plasma levels and/or a state of persistent low diuresis in patients. When these definitions are applied, urinary output is expressed as milliliters (urinary output) per kilogram (body weight). However, the relation between urinary output and body weight is not easy to comprehend. Several factors in obese patients may interfere with renal function, such

as abdominal compartment syndrome, especially in morbid obese patients [3] or hyperfiltration syndrome patients [4]. In addition, several mechanisms that are independent of body weight may influence urine production, such as osmotic balance and concentrating power of the kidneys. Thus, at the present time, there is no definitive evidence demonstrating that urinary output may be related to body weight. Druml et al. do not provide the creatinine plasma levels in their article [1]. Since RIFLE F can be assessed by a threefold increase in plasma creatinine or by a urinary output of $<0.3\text{ ml/kg/h}$ persisting for 24 h, it is important to know, for each group in their study, the proportion of AKI diagnoses established only using the urinary output criteria. In a study involving 82 patients with body mass index (BMI) >35 compared to 102 patients with BMI <30 , we did not find any difference in the occurrence of renal failure based on an assessment of plasma creatinine determination [5]. In another study in which the differences between RIFLE and AKIN scores were compared, urine output criteria was normalized, assuming an average patient weight of 70 kg [6]. Thus, it is important to know if the paradoxically better prognosis of AKI in obese patients in the study of Druml et al. [1] was not actually influenced by the power given to an overestimation of renal dysfunction in some of the obese patients.

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