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Accuracy of plasma neutrophil gelatinase-associated lipocalin in the early diagnosis of contrast-induced acute kidney injury in critical illness: reply to Quartin et al.

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Dear Editor,
We thank Dr. Quartin et al. for their interest and comments on our recently published article on the accuracy of plasma neutrophil gelatinase-associated lipocalin (pNGAL) in the early diagnosis of contrast-induced acute kidney injury (CI-AKI) in the intensive care unit (ICU) setting [1]. Questions have been raised about the definition of CI-AKI used and on the reality of CI-AKI in critically ill patients [2].

There is no consensus definition of CI-AKI, and we used the Acute Kidney Injury Network (AKIN) criteria because, in a previous study performed in a surgical ICU in our university hospital, AKIN classification was the most sensitive definition to detect CI-AKI, also being associated with two important outcomes: renal replacement therapy and mortality. This definition presents the advantage of taking into account modest increases in creatinine concentration, and it has already been demonstrated that even small

creatinine variations are associated with prognosis. Moreover, we used both creatinine and urine output criteria for CI-AKI diagnosis, as recently recommended in the Kidney Disease: Improving Global Outcomes (KDIGO) AKI guideline.

As mentioned in our article, CI-AKI could not be exclusively related to contrast medium (CM) administration because of the complexity of ICU patients, who frequently present multiple risk factors that can influence kidney function. We have already discussed this issue and its potential consequences for the interpretation of the study results in the journal. To limit this selection bias, we excluded all patients who had unstable renal function within the 48 h before CM injection. Obviously, this does not mean that CM was the only factor implicated in subsequent AKI, but in these conditions pNGAL should have been able to detect any new AKI related exclusively to CM administration or not.

In recent years, some studies have investigated the impact of CM administration on AKI development after a radiographic examination by matching ICU patients with and without CM exposure on arbitrarily chosen variables or on the propensity to have CM injection. These studies found that patients who had no CM administration had the same AKI incidence as those who received CM. So, they concluded that CM had minimal impact on kidney function variations after radiologic examination in ICU patients. Unfortunately, these studies had similar bias. Indeed, because of the complexity of critically ill patients, all factors that could influence kidney function cannot be

matched, and differences in unmatched variables could unbalance groups and hide the nephrotoxicity of CM.

Overall, both methods used to study CI-AKI in the ICU setting (patient selection or matching) have flaws, and actually it is very difficult to determine the real impact of CM administration in AKI occurring after CM exposure in ICU patients. Must we, however, neglect a pathology already identified outside the ICU setting on the pretext that it is difficult to characterize in critically ill patients? Common sense tells us no. Thus, new efforts are warranted to identify patients most at risk of CI-AKI and to determine the best prevention strategy in the ICU setting.

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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