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LETTER

Prevention of Contrast-induced Nephropathy in High-risk Patients with Hemofiltration

To the Editor:

We believe the study by Marenzi and colleagues[1] possesses several shortcomings. First, as the authors point out, a major confounder of the beneficial results of pre- and posthemofiltration may have been the alkalinizing effect of the bicarbonate-based replacement solution during hemofiltration. The omission of bicarbonate-based fluids in the control group is understandable because the results of the study by Merten and colleagues[2] were published just as enrollment in Marenzi et al's[1] study was concluding. However, given that the prophylactic benefits of bicarbonate therapy were so robust in Merten et al's study, and that posthemofiltration alone provided far less protection against contrast-induced nephropathy in this current study, it is completely plausible that most, if not all, of the benefits in the pre- and posthemofiltration group were attributable to alkalization precontrast administration and not hemofiltration itself.

Second, the authors did not administer n-acetylcysteine to the control group in conjunction with intravenous hydration. Although the true benefits of n-acetylcysteine are still not fully conclusive, it remains part of the standard of care in prevention of contrast-induced nephropathy.[3] It is routinely administered because of its low cost and lack of side effects, along with its *potential beneficial effects*, as evidenced by positive results (point estimates of relative risk reductions ranging from 0.37-0.73) in several published meta-analyses.[4-8]

Third, iopentol, a nonionic, low-osmolality contrast agent, was used in this study. There is evidence that the rate of contrast nephropathy is much lower in high-risk patients when a nonionic iso-osmolar agent is used (3% vs 26% in nonionic low-osmolality contrast).[9]

Therefore, we think the control group was "handicapped" in 3 ways: lack of bicarbonate-containing fluids, lack of n-acetylcysteine prophylaxis, and lack of nonionic iso-osmolar contrast. Before this costly and invasive technique were ever to become adopted for prevention of contrast-induced nephropathy in high-risk individuals, a trial comparing hemofiltration versus the current standards of care would need to be performed.

Finally, the authors strongly suggest that the benefits of pre- and posthemofiltration may have been obtained because of "controlled high-volume hydration" that may have resulted in an "increase in effective circulating volume, renal perfusion pressure, and glomerular filtration." However, it is difficult to imagine an increase in any of these 3 parameters when using a completely isovolemic protocol as described in the "Methods" section of the article. If the hypothesis of the authors is correct, then urine volume should have increased. Do the authors have any data on urine output pre- and posttreatments in the 3 groups?

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