

## Re: Risk Factors for Contrast-related Acute Kidney Injury According to Risk, Injury, Failure, Loss, and End-stage Criteria in Patients With Coronary Interventions

To the editor,

I am writing in connection with the paper published in the April 2010 issue of the *Iranian Journal of kidney Diseases*, entitled "Risk Factors for Contrast-related Acute Kidney Injury According to Risk, Injury, Failure, Loss, and End-stage Criteria in Patients With Coronary Interventions."<sup>1</sup> The authors followed comprehensively 290 patients who underwent angiography and evaluated the risk factors for occurrence of acute kidney injury by change of creatinine. The idea of dividing patients according to the Risk, Injury, Failure, Loss, and End-stage criteria is remarkable, but I have some concerns.

The authors used the Modification of Diet in Renal Disease (MDRD) formula and approached an estimated glomerular filtration rate (GFR) of less than 90 mL/min/1.73 m<sup>2</sup> as a risk factor of nephropathy. It has been shown in several studies that formula-estimated GFR underestimates kidney function in people without known kidney disease, more so for Jaffe-related results.<sup>2,3</sup> In our screening of more than 30 000 persons, we found that the MDRD formula in younger age group with higher GFR underestimates GFR in comparison with the Cockcroft-Gault equation, but it overestimates lower GFRs, especially in older individuals (> 55 years). It seems that using the cutoff level of 60 mL/min/1.73 m<sup>2</sup> is logical to have clarified results.<sup>4</sup> de Augustin and colleagues, in their study on 273 patients with normal serum creatinine values, reported that a creatinine clearance rate less than 80 mL/min/1.73 m<sup>2</sup> had a sensitivity of 81% for predicting contrast nephropathy.<sup>5</sup>

Furthermore, it is well known that GFR decreases by 1 mL/min/1.73 m<sup>2</sup> each year after the age of 30 years in healthy persons, which predisposes aged patients to such a side effect of contrast agents. Astonishingly, the authors could not find any positive correlation between age and acute kidney injury. Most studies in Iran and other countries emphasize on the great impact of advancing age on contrast media-induced nephropathy.<sup>6-8</sup> The cutoff for old age in different studies was 60 to 75

years. It is possible that the patients of the present study were younger than those in other studies on average, or it is possible that the authors did not use a cutoff and only compared the mean age of the two groups of patients with and without acute kidney injury after contrast medium administration.

Another key point is the definition of contrast media-induced nephropathy. Newhouse and associates identified 32 161 patients with contrast medium administration in an electronic medical record with serial creatinine levels recorded on 5 consecutive days and no prior contrast administration in the previous 10 days. More than half of the patients showed a change of at least 25% in serum creatinine level. They suggested that the background incidence of "hospital-induced nephropathy" (comorbidity-associated nephropathy) confounded the hazard estimates of developing nephropathy, possibly because of the lack of a true control group in most studies on contrast media-induced nephropathy.<sup>9</sup>

The last but not the least, administration of isotonic saline solution (volume repletion) and other preventive managements to all patients may be the reason of attenuating the impact of some traditional risk factors for contrast media-induced nephropathy.

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