

## Contrast medium-induced nephropathy, a more practical approach to prevention?

**Rayner A and Abdulkarim J**

Department of Clinical Radiology, Oxford Radcliffe Hospitals (The Horton Hospital), Banbury, UK

To The Editor: we read with interest the good review article by Drs Sterner and Nyman [1] concerning the safe use of intravascular contrast medium for both coronary interventions and multi-channel detector computed tomography.

As a radiology department in the United Kingdom, our current policy is to follow specific guidelines issued by the Royal College of Radiologists [2]

When compared, the two publications hold many similarities with respect to their recommendations for clinical practice. This is especially true with the recommendations for optimising the patient's renal state prior to any procedure requiring the administration of intravascular contrast media.

However, on a practical note, we would suggest that the different calculations proposed to determine the Glomerular Filtration Rate [3-5] are too complex for use in every patient requiring intravascular contrast medium. As a department, we continue to use baseline creatinine levels as a screening tool in high risk patients (i.e. the elderly and patients with a history of diabetes and/or renal disease). We have found this to be sufficient.

A review paper by P. Aspelin [6] conveys a very similar message but perhaps in a more general physician-orientated approach. His concluding recommendations are simple: confirm the need for contrast media, identify the at risk patient, hydrate adequately, discontinue nephrotoxic drugs before the procedure, and choose a contrast medium with the lowest nephrotoxic effects. These simple guidelines are perhaps more appropriate for day-to-day practice and for general distribution to referring clinicians who may be deterred by the more complicated equations in the other publications.

### References

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### In Reply

**Sterner G<sup>1</sup> and Nyman U<sup>2</sup>**

- (1) Department of Nephrology and Transplantation, Malmö University Hospital, Malmö, Sweden
- (2) Department of Diagnostic Radiology, Lasarettet Trelleborg, Trelleborg, Sweden.

We thank Drs. Rayner and Abdulkarim for their interest and appreciating comments on our article [1], and the editors of *Libyan J Med* for the opportunity to respond to their Letter. Drs. Rayner and Abdulkarim found our recommendation to use estimated glomerular filtration rate (eGFR) rather than serum creatinine alone too complex "in every patient requiring intravascular contrast medium" and prefer a "more general physician-oriented approach".

Firstly, according to our presented guidelines we only recommend serum creatinine to calculate GFR in "patients with suspected or known renal disease/-surgery/-impairment, diabetes mellitus, congestive heart failure, age >70 years or in any other obvious risk factor" [1].

Secondly, it is well recognised that serum creatinine is a poor predictor of GFR (the best overall measure of renal function), to a large extent due to its dependent on muscular mass. Therefore the National Kidney Foundation (NKF; USA) [2] as well as the American Heart Association (AHA) Science Advisory Board 2006 [3] have strongly recommended that "serum creatinine concentration alone should not be used to assess the level of kidney function". They further state that "the level of GFR should be estimated from prediction equations that take into account the serum creatinine concentration and some or all of the following: age, gender, race, and body size. In adults, the MDRD Study and Cockcroft-Gault equations provide useful estimates of GFR". As an example a 50-year old 80-kg male with a serum creatinine of 100 mmol/L will have an essentially normal eGFR of 89 mL/min according to the Cockcroft-Gault formula, while it will be calculated to only 30 mL/min (borderline to severe kidney according to NKF) at

the same serum creatinine level in an 80-year old 50-kg female. Thus, ignoring muscle mass and simply relying on serum creatinine may result in a substantial overestimation of GFR, especially in elderly low-weight patients.

Thirdly, using eGFR to form a ratio between the planned contrast medium dose and eGFR has recently been advocated for improved risk assessment [4,5,6,7].

Fourthly and finally, regarding the complexity to do the GFR calculations there are numbers of calculators freely available on the internet for download; e.g.

[kidney.org/professionals/KDOQI/gfr\\_calculator.cfm](http://kidney.org/professionals/KDOQI/gfr_calculator.cfm). It just takes a few seconds to fill it in.

Considering the potential consequences of a severe contrast-induced nephropathy, we believe that we owe the patient the effort to overcome this complexity.

In conclusion, our message is that health care should take a patient-oriented rather than a comfortable physician-oriented approach.

## References

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