

Reducing delays to transplant listing: a reno-protective protocol facilitates safe coronary investigation and treatment in patients with severe renal impairment

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Aims

The West Midlands Transplant First Project has identified different approaches to coronary angiography. Some units routinely delay angiography until patients are established on dialysis, in order to reduce the risk of contrast nephropathy. However, this causes a significant delay to transplant listing and can potentially miss significant cardiac lesions. At our institution patients with documented renal impairment, attending the cardiac catheter laboratory for invasive procedures, were pre-treated with weight-adjusted intravenous 1.26% sodium bicarbonate solution, in addition to purposefully limiting the volume of contrast used (reno-protective protocol). It is not normal practice to delay investigation until post-dialysis and therefore the aim was to study the effectiveness of this protocol in patients with renal impairment.

Methods

The clinical records of 60 patients on the reno-protective protocol were reviewed. Those presenting in cardiogenic shock were excluded. 31/59 had an estimated glomerular filtration rate (eGFR) of <40 mL/min/1.72 m² prior to the procedure (range 2–40), and were not on dialysis. This cohort of 31 was analysed. Procedural details, serum biochemistry before and after the procedure, and clinical outcome were analysed.

Results

The median age was 64 years (47–87) and 20/31 (64.5%) were male. 9/31 (29%) underwent percutaneous coronary intervention (PCI) and the remainder underwent diagnostic angiography only. 18/31 (58%) had an eGFR <20 prior to the procedure. The median volume of contrast used was 60 mL (15–180). An iso-osmolar contrast agent, iodixanol, was used in all cases. There was no significant change observed in the mean eGFR pre- and post-procedure (20.3 to 19.7 mL/min/1.72 m² (p=ns)). Similarly there

was a small but non-significant rise in mean creatinine (341.5 to 363.5 umol/mL (p=ns)). No patient exhibited a rise in creatinine >1.5 times baseline. No patient required dialysis in the 2 months following the procedure. In the 14/18 of the patients with an eGFR <20, only 60 mL of contrast or less were used. In this group the eGFR was predominantly unchanged, or fell by a maximum of 4 mL/min/1.72 m² but increased by 4 mL/min/1.72 m² in only one case following angiography.

Conclusion

Coronary angiography and PCI may be safely undertaken in patients with significant renal impairment who are not on dialysis, provided judicious use of intravascular contrast is observed and pre-treatment with sodium bicarbonate solution is undertaken. We have combined the Transplant First Project's approach to identifying inequalities in care due to different practice patterns, with rigorous audit of that practice.

Given that delay in coronary angiography can limit access to transplant and has the potential to miss clinically relevant cardiac disease, the approach taken in our organisation should be considered for wider use. ■

Conflict of interest statement:

I have no conflict of interest.

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