

## FIVE THINGS TO KNOW ABOUT ...

**Contrast-induced nephropathy**

Mark O. Baerlocher MD, Murray Asch MD, Andy Myers MD

Previously published at [www.cmaj.ca](http://www.cmaj.ca)**Contrast-induced nephropathy is a common cause of hospital-acquired renal failure**

Contrast-induced nephropathy is defined as a serum creatinine level that increases by at least 25% or is 44.2  $\mu\text{mol/L}$  greater than baseline within three days of receiving contrast medium intravascularly in the absence of another cause.<sup>1</sup> Contrast-induced nephropathy is usually self-limiting; at worst, it can make the patient permanently dependent on hemodialysis or can result in death.

**Main risk factors are renal dysfunction and diabetes (particularly in the presence of chronic renal disease)**

The possibility of renal dysfunction should be considered in a patient with one or more of the following characteristics:<sup>2</sup>

- dehydration
- increased age
- use of nephrotoxic drugs (e.g., nonsteroidal anti-inflammatory drugs, loop diuretics, aminoglycosides, chemotherapy)
- heart failure
- cirrhosis
- sepsis

**Assess renal function in a patient with risk factors**

A patient with diabetes or possible renal dysfunction should have his or her renal function assessed before undergoing contrast-enhanced imaging. The estimated glomerular filtration rate is the preferred measure. The serum creatinine level may not be an accurate measure in elderly and very frail patients. An estimated glomerular filtration rate of 30–59 mL/min per 1.73 m<sup>2</sup> indicates moderate renal dysfunction. An estimated rate of less than 30 mL/min per 1.73 m<sup>2</sup> indicates severe renal dysfunction.<sup>3</sup>

**Consider alternative imaging tests**

In a patient with moderate or severe renal dysfunction, alternative imaging tests may yield the same information without the risks. Other options include computed tomography without contrast medium, ultrasonography and magnetic resonance imaging.

**If intravascular use of a contrast medium is considered essential in a patient with moderate or severe renal function, use renal protective measures**

These measures include<sup>4</sup>:

- hydration or volume expansion, ideally with intravenous 0.9% saline solution or isotonic bicarbonate solution;
- administration of acetylcysteine (600 mg orally twice daily) the day before and the day of the test (although there is some disagreement in the literature about its usefulness);
- reduction of the amount of contrast medium, and
- no additional administration of contrast medium for at least 72 hours.

A patient at increased risk of contrast-induced nephropathy should have his or her serum creatinine level measured again 48–72 hours after receiving contrast medium intravascularly. If renal function does not return to baseline, referral to a nephrologist may be necessary.

**REFERENCES**

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