Renal function in ACE inhibitor treatment

GPs are at the frontline in the early detection of renal failure in their patients on ACE inhibitors, writes Ruth Moloney

ACE (ANGIOTENSIN-CONVERTING ENZYME) inhibitors are commonly prescribed in general practice for patients with hypertension. When a patient is on an ACE inhibitor it is important to monitor their renal function, as a known side-effect is renal impairment, which can progress to renal failure.

Over the past 40 years the survival rate for acute renal failure has not improved, primarily because affected patients are now older and have more comorbid conditions. Depending on the severity of renal failure, the mortality rate can range from 7% to as high as 80%. Patients with acute renal failure are often asymptomatic, and the condition is diagnosed by observed elevations in serum creatinine. The primary agents that cause prerenal acute renal failure are ACE inhibitors. This is why GPs are at the frontline to detect, early on, renal failure in their patients on ACE inhibitors and why it is so important that renal function monitoring guidelines are adhered to.

In my first month of general practice I started a gentleman with hypertension on an ACE inhibitor. I knew I had to monitor his renal function but had to check exactly when and how frequently. This prompted me to carry out a literature review. I examined the guidelines given in the following sources:

- NICE guidelines 2002
- Irish Nephrology Society
- National Medicines Information Centre, St James’s Hospital (www.nmic.ie). Congestive Heart Failure 2006; 12: 2
- PRODIGY Hypertension 2005, NHS UK
- British Hypertension Society – Therapeutics
- Kalra et al. BMJ Jan 1999: 318: 234-7. Questionnaire study and audit of use of angiotensin converting enzyme inhibitor and monitoring in general practice; the need for guidelines to prevent renal failure

Extrapolating from these best guidelines, the standard I was measuring against was that renal function should be checked before starting an ACE inhibitor, a week after initiation, 12 months after initiation, on an annual basis thereafter and for each dose increase.

I carried out an audit of the patients on ACE inhibitors in my practice in Co. Tipperary. I performed a search of the Socrates database looking for all patients prescribed ACE inhibitors from Jan 1, 2008 and checked when they had their renal function checked. There were 151 patients on ACE inhibitors:

- 60% had baseline U&E
- 2% had U&E checked one week later
- 45% had U&E checked within following six months
- 62% had U&E checked within following 12 months
- 55% had yearly U&E checks
- Of note, 37% of those with type 2 diabetes did not have yearly U&E checks while on an ACE inhibitor.

On the whole, renal function was monitored in patients on ACE inhibitors in my practice, but guidelines were not met on the frequency. In particular, hardly any were checked one week after commencing an ACE inhibitor. A total of 64%, a substantial portion, had a U&E check within 12 months of commencing the medication. However, only 55% had yearly checks thereafter. This could be improved. Also, 100% of patients with type 2 diabetes on an ACE inhibitor should be having yearly monitoring of renal function versus 63% in this audit.

A number of initiatives could be undertaken to improve compliance with guidelines:

- GP registrar to go through the list of patients in audit and flag the people that need to be called in for a U&E check
- Opportunistically check patients with hypertension seen on a daily basis and review their monitoring schedule
- Renal function to be part of an organised annual diabetic patient check
- When starting a patient on an ACE inhibitor, it would be good practice to inform them that they need their renal function monitored and tell them at what intervals
- It was also discussed that it may be feasible to put a reminder on these patients’ files so that it is flagged for the doctor as to when they need a U&E check. This system is already in place on Socrates when reminding us that immunisations are due for a patient.

The audit results were discussed at a practice meeting and implementations were agreed. The practice will be re-audited after 12 months to complete the audit cycle.

This was a simple and straightforward audit that should improve patients’ standard of care. In the age of competence assurance and clinical audit, I am very appreciative that I had the opportunity and experience of carrying out an audit in my registrar year.

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A presentation of this audit won the poster competition at the ICGP Research and Audit Conference, June 2010. It has also been accepted for presentation at WONCA Europe 2010 in Malaga, October 2010