



FOCUS ON RESEARCH

Ascertainment of the risk factors for acute kidney injury in patients prescribed angiotensin converting enzyme inhibitors- a population study (HICG/1/1)

Researchers

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Aim: To assess the incidence of, and risk factors for, acute kidney injury in patients in NHS Greater Glasgow and Clyde (NHS GGC) during 2009-2015 starting therapy with two types of drugs: angiotensin converting enzyme inhibitors or angiotensin receptor blockers (ACEi/ARB).

Project outline/methodology: We analysed anonymised routinely collected health care data held by the NHS GGC 'Safe Haven' to identify patients prescribed these medications. We combined records from GP comorbidity data, cashed prescriptions, laboratory testing of kidney function and hospital discharge record data to determine the incidence of acute kidney injury recorded during a hospital admission as well as calculating the incidence of acute kidney injury purely diagnosed from laboratory data and not resulting in hospital admission.

Key Results: Of the 60,241 patients prescribed ACEi/ARB during the study period there were 1009 cases where acute kidney injury (AKI) was recorded during a hospital admission. There were a 4,010 AKI events classified by analysis of the laboratory data. In total there were 4,212 AKI events. The incidence of all acute kidney injury events was 31.9 per 1000-person-years (py), with an incidence of hospital admission with acute kidney injury of 7.4 per 1000-py. Major independent risk factors for development of acute kidney injury were male gender, increasing age, diuretic use, NSAID use, history of heart failure, diabetes mellitus, baseline kidney function and history of cerebrovascular disease.

Conclusions: We have described the incidence of acute kidney injury in patients taking ACEi/ARB therapy, both using hospital discharge data and laboratory data. This study has identified both clinical risk factors and concomitant medication use associated with development of acute kidney injury in these patients.

What does this study add to the field?: Although the association of ACEi/ARB therapy with acute kidney injury is well known, the clinical risk factors for this association have not been described in detail. The patients who usually benefit from these drugs (heart failure, hypertension, chronic kidney disease) are actually at greatest risk of developing acute kidney injury whilst on these medications.

Implications for practice or policy: This study highlights the patients at highest risk of acute kidney injury and should lead to consideration of strategies for monitoring of kidney function in patients receiving these drugs aiming to reduce the risk of this rare but potentially life threatening complication associated with their use.

Where to next: The next step is development of an acute kidney injury risk score to increase awareness of risk and identify which patients on ACEi/ARB treatment would benefit from more intensive monitoring for this complication.

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