

Use of nephrotoxic drugs in patients with chronic kidney disease: a population-based study in Southern Italy

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Chronic kidney disease (CKD) is characterized by progressive loss of renal function. The use of nephrotoxic drugs can further aggravate CKD. It is therefore imperative to explore prescribing practices that can negatively affect patients with renal vulnerability. The aim of this drug-utilization study was to explore the use of nephrotoxic drugs in CKD patients in the general population of Caserta from Southern Italy during the years 2006-2011.

As data source we used the general practice 'Arianna' database, containing data from 158,510 patients living in Caserta and registered with 123 general practitioners (GPs). CKD patients were identified in the database by searching for: 1) ICD-9CM CKD as cause of hospitalisation; 2) CKD-relevant procedures undergone in hospital (e.g., dialysis); 3) drug prescriptions issued for a CKD-related indication. A list of nephrotoxic drugs was compiled through a literature search using the MESH terms 'nephrotoxic drug', 'chronic kidney insufficiency' and 'drug-induced renal failure', which was further revised by nephrologists. Based on the summary of product characteristics, nephrotoxic drugs were classified as either 'contraindicated' or 'to be used with caution' in CKD. Contraindicated nephrotoxic drugs included NSAIDs, aminoglycosides, sulfonamides and others (methotrexate, cisplatin, interferon alfa, lithium, thiazides, colistin, gold preparations and zoledronic acid). Frequency of use of 'contraindicated' and 'to be used with caution' nephrotoxic drugs in the year prior, one year after and during the whole period after the first diagnosis of CKD (index date) was calculated.

Overall, 1,989 incident CKD patients were identified (1.3% of total population from Caserta). Of these, 37.4% received at least one prescription for a contraindicated nephrotoxic drug within one year after diagnosis of CKD. A similar proportion (40.5%) was observed within one year prior to CKD diagnosis. In detail, 985 CKD patients (49.5%) had at least one prescription of NSAID (most commonly used contraindicated drugs) between index date and end of follow-up. Overall, the most common reason for prescribing NSAIDs in CKD patients was bone and joint disorders (76.4% of CKD patients using NSAIDs). A large proportion of CKD patients (28%) who were treated with NSAIDs received these drugs for periods exceeding 90 days. Drugs that should be used with caution in CKD were used more commonly, even increasing after CKD diagnosis (79.2% within one year prior vs. 84.2% within year after CKD diagnosis). The most frequently used drugs labeled 'use with caution', in CKD patients were allopurinol (39.6% in the year after ID) and ramipril (26.7%).

Contraindicated nephrotoxic drugs were highly prescribed in CKD patients from a general population of Southern Italy. The diagnosis of CKD did not seem to reduce the prescription of potentially harmful nephrotoxic drugs, increasing the risk of preventable renal damage. These findings highlight the need to implement healthcare measures that minimise the use of nephrotoxic drugs in CKD patients in general practice.