

ORIGINAL ARTICLE

Study of the Prevalence of Immune System Drug related Renal Failure in Patients with Renal Problem

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ABSTRACT

The functions of the kidneys are to filter the blood. Renal failure is a condition in which the kidneys fail to adequately filter waste products from the blood. Most drugs found to cause nephrotoxicity exert toxic effects by one or more common pathogenic mechanisms. In this study information's of patients were collected from their files then analyzed. three of these twenty patients were induced from anti-cancer drugs and three others of these twenty patients were induced from radiocontrast agents. Pharmacists are an essential resource in safe drug use and that pharmacist-physician-patient collaboration is important. The kidney is exposed to many potential toxins because of its anatomy and physiology. Early recognition is important because chronic interstitial nephritis has been known to progress to end-stage renal disease

Key Words: Immune system drug, renal failure, patients

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INTRODUCTION

The kidneys are a pair of organs located in the back of the abdomen. The functions of the kidneys are to filter the blood. All the blood in our bodies passes through the kidneys several times a day. The kidneys remove wastes, control the body's fluid balance, and regulate the balance of electrolytes [1-3].

Renal failure is a condition in which the kidneys fail to adequately filter waste products from the blood. The two main types are acute kidney injury, which is often reversible with adequate treatment, and chronic kidney disease, which is often not reversible. In both cases, there is usually an underlying cause. Drug-induced kidney disease occurs primarily in patients with underlying risk factors. A number of factors enhance the vulnerability of the kidney to the nephrotoxic effects of drugs and toxins. They are broadly categorized as patient-specific, kidney-related, and drug-related factors. The epidemiologic importance of acute kidney injury is exemplified by strong evidence that small reductions in renal function of hospitalized patients are associated with an increased morbidity and mortality [3-6].

Drugs cause approximately twenty percent of community- and hospital acquired episodes of acute renal failure. Although renal impairment is often reversible if the offending drug is discontinued, the condition can be costly and may require multiple interventions, including hospitalization [7-].

Most drugs found to cause nephrotoxicity exert toxic effects by one or more common pathogenic mechanisms. These include altered intraglomerular hemodynamics, tubular cell toxicity, inflammation, crystal nephropathy, rhabdomyolysis, and thrombotic microangiopathy. Renal tubular cells, in particular proximal tubule cells, are vulnerable to the toxic effects of drugs because their role in concentrating and reabsorbing glomerular filtrate exposes them to high levels of circulating toxins [9-12].

Drugs can cause inflammatory changes in the glomerulus, renal tubular cells, and the surrounding interstitium, leading to fibrosis and renal scarring. Glomerulonephritis is an inflammatory condition caused primarily by immune mechanisms and is often associated with proteinuria in the nephritic range. Acute interstitial nephritis, which can result from an allergic response to a suspected drug, develops in an

idiosyncratic, non-dose-dependent fashion. Drugs that cause acute interstitial nephritis are thought to bind to antigens in the kidney or act as antigens that are then deposited into the interstitium, inducing an immune reaction [13-15].

Chronic interstitial nephritis is less likely than acute interstitial nephritis to be drug induced; it is also insidious in onset, and signs of hypersensitivity are often lacking [11, 15-17]. One of the major side effects of chemotherapy, used for several solid tumors, is nephrotoxicity, or toxic acute kidney injury. The cellular and molecular mechanisms responsible for drug-induced nephrotoxicity to renal tubular epithelial cells are not completely understood. Chemotherapy for lymphoproliferative disease, leading to tumor lysis syndrome with uric acid and calcium phosphate crystal deposition, has also been associated with renal failure [10, 13, 18-20]. Early recognition is important because chronic interstitial nephritis has been known to progress to end-stage renal disease [19-21].

MATERIAL AND METHOD

This study is a descriptive cross-sectional retrospective study on renal patients in Imam Reza and martyr Madani hospitals. In the present study, a questionnaire was used to collect data. In the study, 241 questionnaires were completed mainly on the case that cases selected randomly then Data were analyzed using t-test student's test.

RESULT

Results of this research were showed in these shapes. From 241 persons, there are 22 renal failure patients. three of these twenty patients were induced from anti-cancer drugs (Methotrexate, Cisplatin and Ifosfamide) and three others of these twenty patients were induced from Radiocontrast agents.

Fig1: Number and percent in all patients

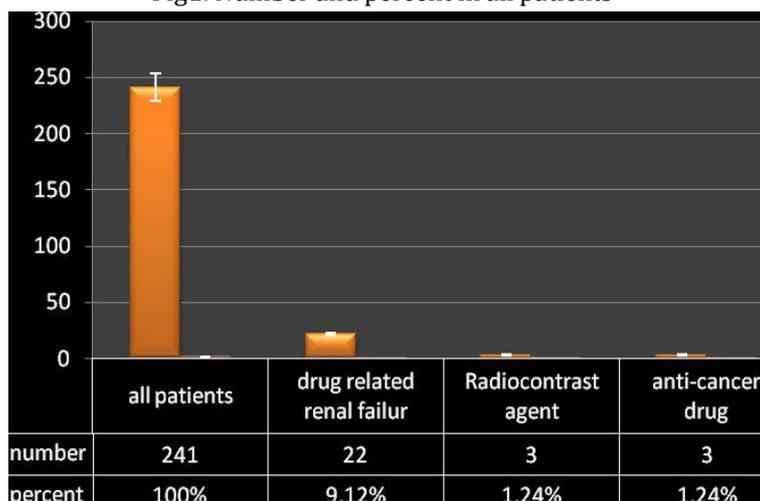
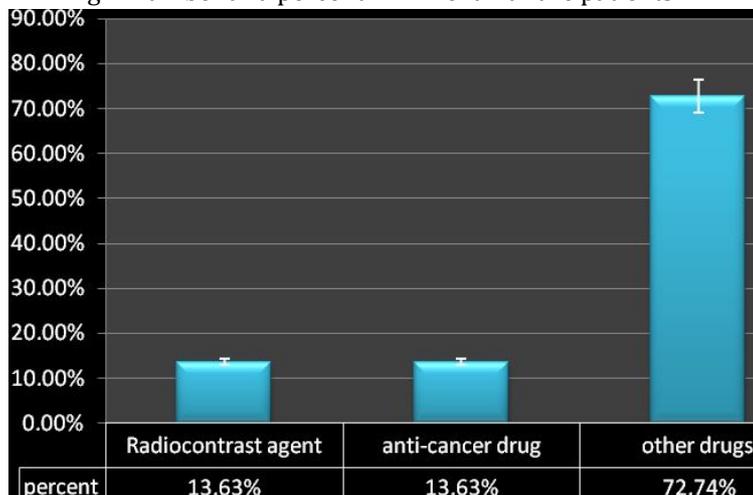


Fig2: Number and percent in 22 renal failure patients



DISCUSSION

The kidney is exposed to many potential toxins because of its anatomy and physiology. Prerenal factors affecting cardiac output, drugs altering intrarenal haemodynamics and those directly toxic to the renal parenchyma may cause life-threatening renal impairment. Comorbidities and pre-existing renal disease increase the risks. Careful assessment before prescribing commonly used drugs, dosage adjustment when indicated and close follow-up are required to avoid the potential iatrogenic pitfalls [7, 16, 22-24].

Drug-induced nephrotoxicity tends to occur more frequently in certain patients and in specific clinical situations. Therefore, successful prevention requires knowledge of patient-related risk factors and drug-related risk factors. Prevention strategies should target the prescribing and monitoring of potential nephrotoxins in at-risk patients [23-26]. There are conflicting reports about the influence of race and genetic variation, as well as whether men are at greater risk of developing acute renal failure compared with women [27-30].

Associated with chronic interstitial nephritis and crystal deposition, nephrotoxicity is dose dependant or related to prolonged duration of treatment. Combination therapy with multiple nephrotoxins can result in synergistic nephrotoxicity, thus increasing the risk of renal injury. Patients with risk factors for contrast-induced nephropathy, especially those who have multiple risk factors, require prophylactic interventions before imaging [31-33].

General preventive measures include using equally effective but non-nephrotoxic drugs whenever possible, correcting risk factors for nephrotoxicity, assessing baseline renal function before initiating therapy, adjusting the dose of drugs for renal function, and avoiding nephrotoxic drug combinations. Pharmacists are an essential resource in safe drug use and that pharmacist-physician-patient collaboration is important [34-37].

Renal function generally returns to baseline provided the impairment is recognized early and the offending drug is discontinued. Failure to act on available information relating to clinical findings or laboratory results was the most common monitoring error. A decrease in renal function as evidenced by a rise in serum creatinine levels following the initiation of a drug signals the possibility of drug-induced renal injury. At the first sign of renal dysfunction, the patient's drug list should be reviewed to identify offending agents [25, 37-39].

In most cases of acute renal failure initial management is by non-specialist clinicians, often comparatively junior ones. All clinicians should therefore be able to recognise the symptoms and signs of acute renal failure, request and interpret initial investigations, initiate appropriate treatment, and know when, and how urgently, to consult a more experienced colleague or specialist. Pharmacovigilance is instrumental in helping to ensure patient safety for both newly released drugs and those that are well established in the market. pharmacovigilance procedures are strictly regulated in the clinical trial setting, post-marketing adverse event reporting is not well implemented or enforced. Managing of dialysis patients has important role and pharmacovigilance and the process of adverse event play in helping to shape the understanding of a drug's safety profile in order to continually enhance patient safety [4, 14, 28, 30, 38-41].

CONCLUSION

The identification of drug safety issues in patients with complex diseases and extensive co-morbidities is therefore particularly challenging. Awareness of the varied presentations of drug-associated renal toxicity is important if morbidity is to be minimized. Therefore, in all patients that would be under drug therapy, inside of other monitoring attention to kidney to prevention of renal failure is necessary and renal tests should be done carefully and renal monitoring should be done for patients that take immune system related drugs.

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