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Original Research

Assessment of cases of Acute Kidney Injury

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***ABSTRACT*:**
Background: Acute kidney injury has a high impact on healthcare systems because of its high morbidity and mortality rates, length of hospital stay, and treatment costs. The present study was conducted to assess cases of acute kidney injury (AKI) in adults. **Materials & Methods:** The present study was conducted on 76 patients of acute kidney injury of both genders. A through clinical examination was done. Severities of illness and survival prediction were assessed. **Results:** Out of 76 patients, males were 50 and females were 26. The mean serum sodium was 128.4 meq/dl, serum potassium was 4.2 meq/dl. Serum urea level in patients was 142.4 mg/dl and serum creatinine was 5.1 mg/dl. 65 patients survived and 11 died. **Conclusion:** Authors found that there was high mortality of AKI. Patients with AKI has poor prognosis.
Key words: AKI, Mortality, Sodium.

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INTRODUCTION

Acute kidney injury (AKI) has a high impact on healthcare systems because of its high morbidity and mortality rates, length of hospital stay, and treatment costs.[1] Thus, prevention and early diagnosis are essential to provide measures to avoid the onset of dialysis as much as possible. Although molecular markers of early kidney damage would be ideal, they are, unfortunately, unavailable for routine clinical use. Therefore, variations in serum creatinine according to the Acute Kidney Injury Network (AKIN) and Kidney Disease Improve Global Outcome (KDIGO) criteria remain a valid tool for diagnosis.[2]

A strict definition of acute renal failure is lacking. Accepted diagnostic criteria include an increase in the serum creatinine level of 0.5 mg per dL (44.2 µmol per L) or a 50 percent increase in the creatinine level above the baseline value, a 50 percent decrease in the baseline-calculated glomerular filtration rate (GFR), or the need for acute kidney replacement therapy.[3] Oliguria is defined as a urine output of less than 400 mL in 24 hours, and anuria is defined as a urine output of less than 100 mL in 24 hours. Acute renal failure is present in 1 to 5 percent of patients at hospital admission. The condition affects 15 to 20 percent of patients in intensive care units (ICUs); reported mortality rates range from 50 to 70 percent in these patients.[1-3] Infection and cardiorespiratory complications are the most common causes of death in patients with acute renal failure.[4] The present study was conducted to assess cases of acute kidney injury (AKI) in adults.

MATERIALS & METHODS

The present study was conducted in the department of General Medicine. It comprised of 76 patients of acute kidney injury of both genders. All patients were informed regarding the study and written consent was

obtained. Ethical clearance was taken from institute ethical committee. Data such as name, age, gender etc. was recorded. A through clinical examination was done. Risk factor of AKI was recorded. Severities of illness and survival prediction were assessed. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 76		
Gender	**Males**	**Females**
Number	50	26

Table I, graph I shows that out of 76 patients, males were 50 and females were 26.

Graph I Distribution of patients

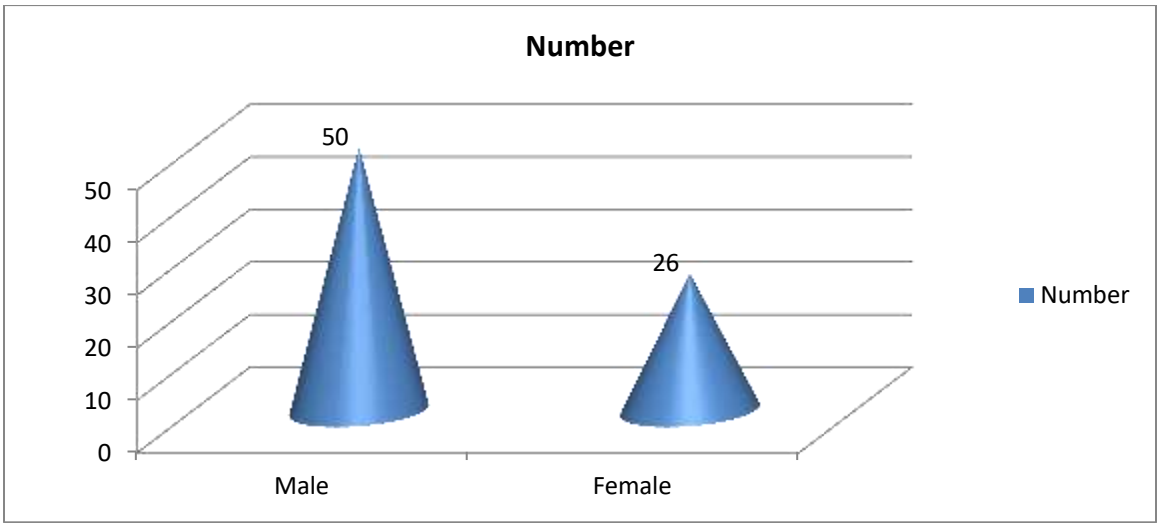
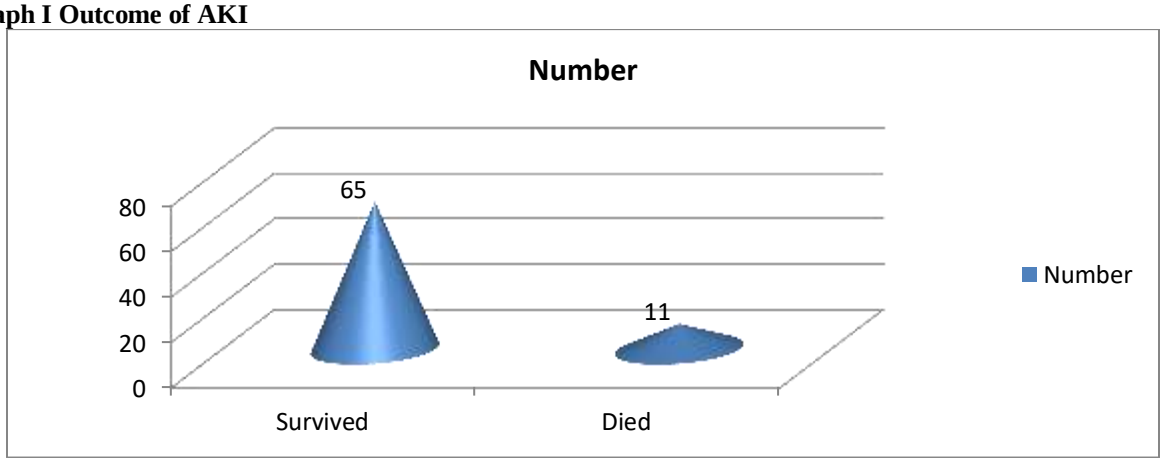


Table II Evaluation of laboratory findings

Biochemistry	Mean
Serum sodium (meq/dl)	128.4
Serum potassium (meq/dl)	4.2
Serum Urea (mg/dl)	142.4
Serum creatinine (mg/dl)	5.1

Table II shows that mean serum sodium was 128.4 meq/dl, serum potassium was 4.2 meq/dl. Serum urea level in patients was 142.4 mg/dl and serum creatinine was 5.1 mg/dl.

Graph I Outcome of AKI



Graph II shows that 65 patients survived and 11 died.

DISCUSSION

Acute kidney injury (AKI) is characterized by a sudden and generally revertible renal function impairment, involving inability to maintain the homeostasis, and may or not be accompanied by reduced diuresis.[5] Usually, AKI may be categorized as pre-renal, related to reduced renal blood flow (RBF) for inappropriate cardiac output or intravascular volume; intrinsic renal disease, from an insult to the renal parenchyma including ischemic, vascular, tubular or glomerular disorders; and post-renal, due to urinary tract obstruction either in single kidney or both kidneys.[6]

During the childhood, the main AKI causes are sepsis, nephrotoxic drugs, and renal ischemia in critically ill patients. These patients, particularly those staying in intensive care units (ICUs), are exposed to a number of conditions which may result in renal impairment, thus significantly increasing the morbi-mortality rate.[7] Among the main causes we should mention: hypovolemia leading to hypoperfusion and consequent hypoxia; inflammatory and thrombotic events caused by sepsis; systemic inflammation from trauma, major surgeries, extracorporeal circulation; use of vasodilator drugs such as phosphodiesterase inhibitors, sedatives, epidural blockade; vasopressors; and use of nephrotoxic drugs as aminoglycosides, amphotericin B, radiological contrasts, and drugs interfering with the renal hemodynamics such as angiotensin converting enzyme inhibitors and angiotensin II receptor blockers. The present study was conducted to assess cases of acute kidney injury (AKI) in adults.

In present study, out of 76 patients, males were 50 and females were 26. Mehta et al[8] in prospective study of the patients evaluated daily the urine output and serum creatinine, and the patients were categorized according to the pRIFLE criteria. During the follow-up period, 235 children were admitted. The incidence of acute kidney injury was 30.6%, and the maximal pRIFLE score during hospitalization was 12.1% for R, 12.1% for I and 6.4% for F. The mortality rate was 12.3%. The patients who developed acute kidney injury had a ten times bigger risk of death versus the not exposed patients. We found that mean serum sodium was 128.4 meq/dl, serum potassium was 4.2 meq/dl. Serum urea level in patients was 142.4 mg/dl and serum creatinine was 5.1 mg/dl. In present study, 65 patients survived and 11 died. Uchino et al[9] included a total of 16% of 400 patients developed EAKI. The associated risk factors were prehospital treatment with nephrotoxic drug, chronic kidney disease (CKD) in stages 3 to 5 and venous thromboembolism (VTE) at admission. The median length of hospital stay was higher among patients who developed EAKI versus 6 and was associated with an increased requirement for dialysis and in-hospital death. The incidence of EAKI in nonsurgical patients is similar to the worldwide incidence of AKI. The risk factors included CKD from stage 3 onwards, prehospital treatment with nephrotoxic drugs, and VTE at admission. EAKI is associated with prolonged hospital stay, increased mortality rate, and dialysis requirement.

Ostermann et al[10] identified 422 AKI and acute on chronic kidney disease patients. Patients were followed up till 6 months after AKI diagnosis. The mean age was 65.8 ± 14.1. Majority of patients were male (58.2%) of Chinese ethnicity (68.8%). One hundred and thirty-two patients (32.6%) were diagnosed in acute care units. Seventy-five percent of patients developed AKI during admission in a non-Renal specialty. Mean baseline eGFR was 50.2 ± 27.7 mL/min. Mean creatinine at AKI diagnosis was 297 ± 161 μmol/L. Renal consultations were initiated at KDIGO Stages 1, 2 and 3 in 58.9, 24.5 and 16.6% of patients, respectively. Three hundred and ten (76.7%) patients had a single etiology of AKI with the 3 most common etiologies of AKI being pre-renal (27.7%), sepsis-associated (25.5%) and ischemic acute tubular necrosis (15.3%). One hundred and nine (27%) patients received acute renal replacement therapy. In-hospital mortality was 20.3%. Six-month mortality post-AKI event was 9.4%. On survival analysis, patients with KDIGO Stage 3 AKI had significantly shorter survival than other stages.

CONCLUSION

Authors found that there was high mortality of AKI. Patients with AKI has poor prognosis.

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