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ORIGINAL ARTICLE

Evaluation of cases of acute kidney disease

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***ABSTRACT*:**
Background: Acute kidney injury (AKI) is characterized by a rapid decline glomerular filtration rate (GFR) and retention of nitrogenous waste products such as blood urea nitrogen (BUN) and creatinine. The present study assessed the cases of AKI in adults. **Materials & Methods:** The present study was conducted on 102 patients of AKI of both genders. Severities of illness and survival prediction were assessed using acute physiology and chronic health evaluation (APACHE)-IV score. Dialytic support was initiated in patients with anuria, oliguria, serum creatinine >4 mg/ dl, severe acidosis, hyperkalemia and volume overload unresponsive to conservative measures. **Results:** out of 102 patients, males were 62 and females were 40. Common comorbid conditions was diabetes in 67, hypertension in 54, CAD in 45, cerebrovascular disease in 12 and chronic obstructive pulmonary disease in 19. The difference was significant (P< 0.05). Serum urea level in patients was 145.6 mg/dl, serum creatinine was 5.4 mg/dl, serum sodium was 131 meq/dl and serum potassium was 4.5 meq/dl. Out of 102 patients, 86 survived and 16 died. **Conclusion:** Authors found AKI has poor prognosis. Common comorbid conditions were diabetes, hypertension, CAD, cerebrovascular disease and chronic obstructive pulmonary disease.
Key words: AKI, Hypertension, CAD, cerebrovascular disease

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Introduction

Acute kidney injury (AKI) is characterized by a rapid decline glomerular filtration rate (GFR) and retention of nitrogenous waste products such as blood urea nitrogen (BUN) and creatinine.[1] For the purpose of diagnosis and management AKI is divided into three categories: Prerenal, intrarenal and postrenal AKI. Recently a new definition of AKI has been widely accepted which is referred to by the acronym RIFLE. AKI in the setting of intensive care unit (ICU) has attracted number of publications for the past two decades. More than 35 definitions of AKI currently exist in the literature.[2]

Acute Kidney Injury (AKI) is the term that has recently replaced the term ARF. AKI is defined as an abrupt (within hours) decrease in kidney function, which encompasses both injury (structural damage) and impairment (loss of function). It is a syndrome that rarely has a sole and distinct pathophysiology.[3] Many patients with AKI have a mixed etiology where the presence of sepsis, ischaemia and nephrotoxicity often co-exist and complicate recognition and treatment. Furthermore the syndrome is quite common among patients without critical illness and it is essential that health care professionals, particularly those without specialization in renal disorders, detect it easily.[4] According to AKI network, the most current consensus diagnostic criteria for AKI is an abrupt (within 48 h) reduction in kidney function currently defined as an absolute increase in serum creatinine of more than or equal to 0.3 mg/dl, a % increase in serum creatinine of 50% (1.5-fold from baseline), or a reduction in UO (documented oliguria of 0.5 ml/kg/hr for 6 hrs).[5] The present study assessed the cases of AKI in adults.

Materials & Methods

The present study was conducted in the department of Internal Medicine. It consisted of 102 patients of AKI of both genders. All were informed regarding the study and written consent was obtained. Ethical approval was obtained prior to the study.

General information such as name, age, gender etc. was recorded. A thorough clinical examination was done in all patients. Severities of illness and survival prediction were assessed using acute physiology and chronic health evaluation (APACHE)-IV score. Dialytic support was initiated in patients with anuria, oliguria, serum creatinine >4 mg/ dl, severe acidosis, hyperkalemia and volume overload unresponsive to conservative measures. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table I Distribution of patients

Total- 102		
Gender	**Males**	**Females**
Number	62	40

Table I shows that out of 102 patients, males were 62 and females were 40.

Table II Comorbid conditions in patients

Comorbid conditions	Number	P value
Diabetes	67	0.01
Hypertension	54	
Coronary artery disease	45	
Cerebrovascular disease	12	
Chronic obstructive pulmonary disease	19	

Table II, graph I shows that common comorbid conditions was diabetes in 67, hypertension in 54, CAD in 45, cerebrovascular disease in 12 and chronic obstructive pulmonary disease in 19. The difference was significant (P< 0.05).

Graph I Comorbid conditions in patients

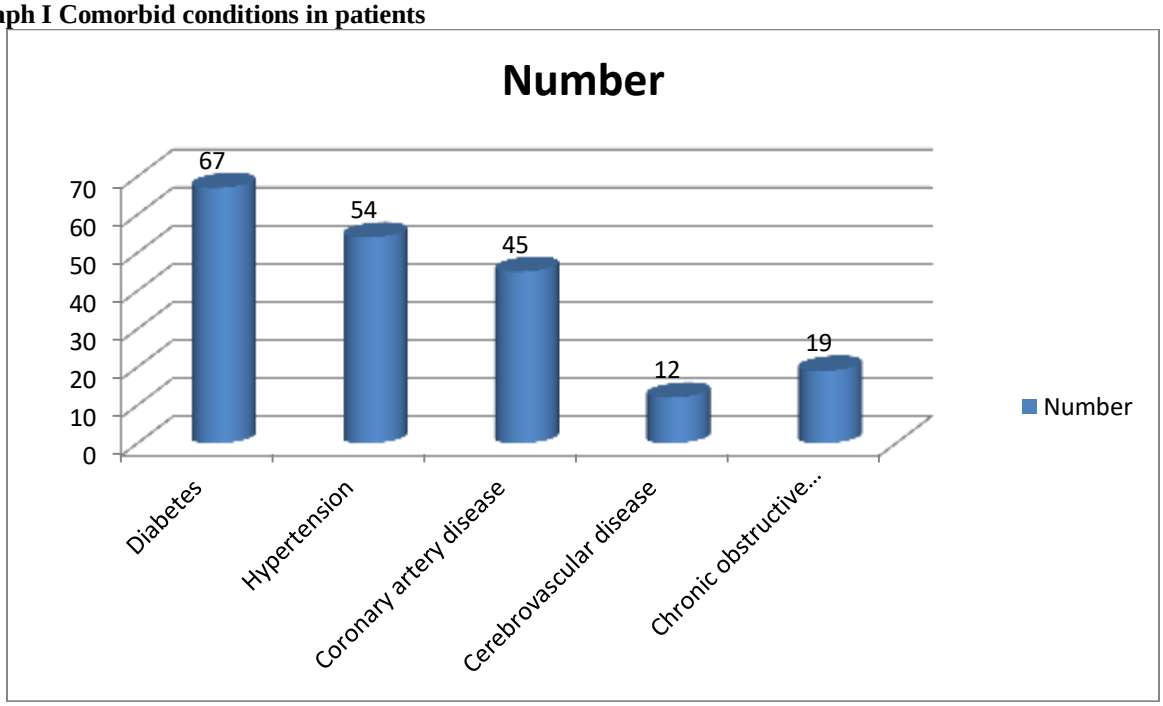
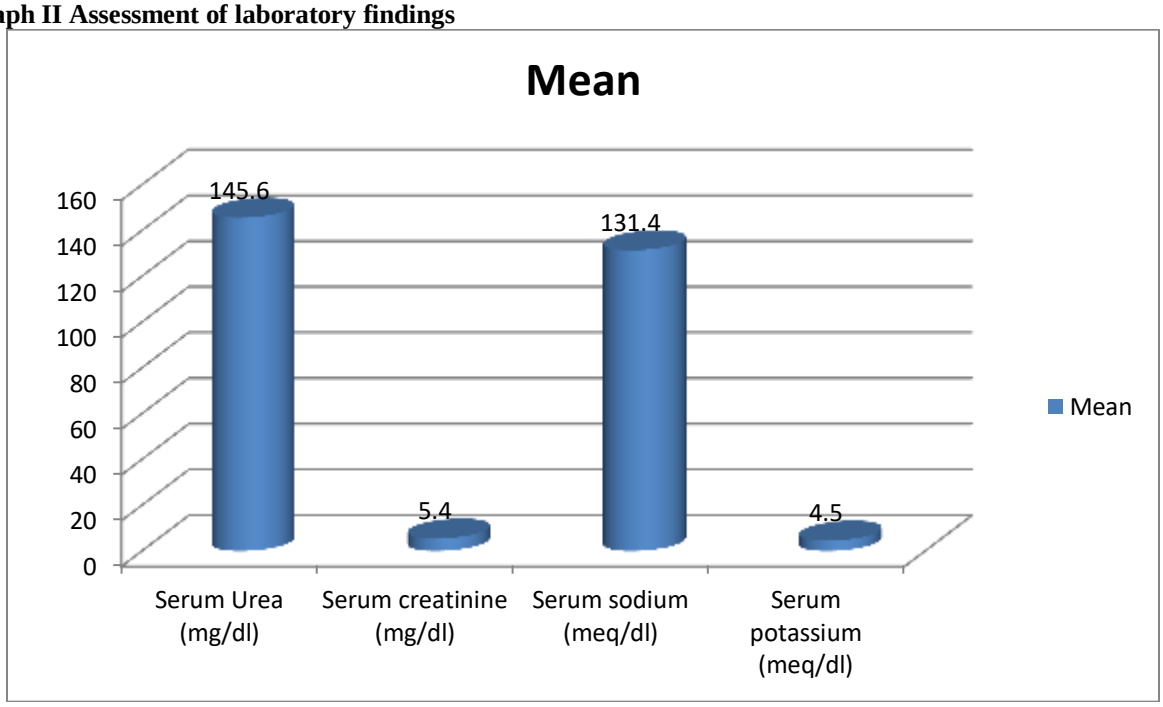


Table III Assessment of laboratory findings

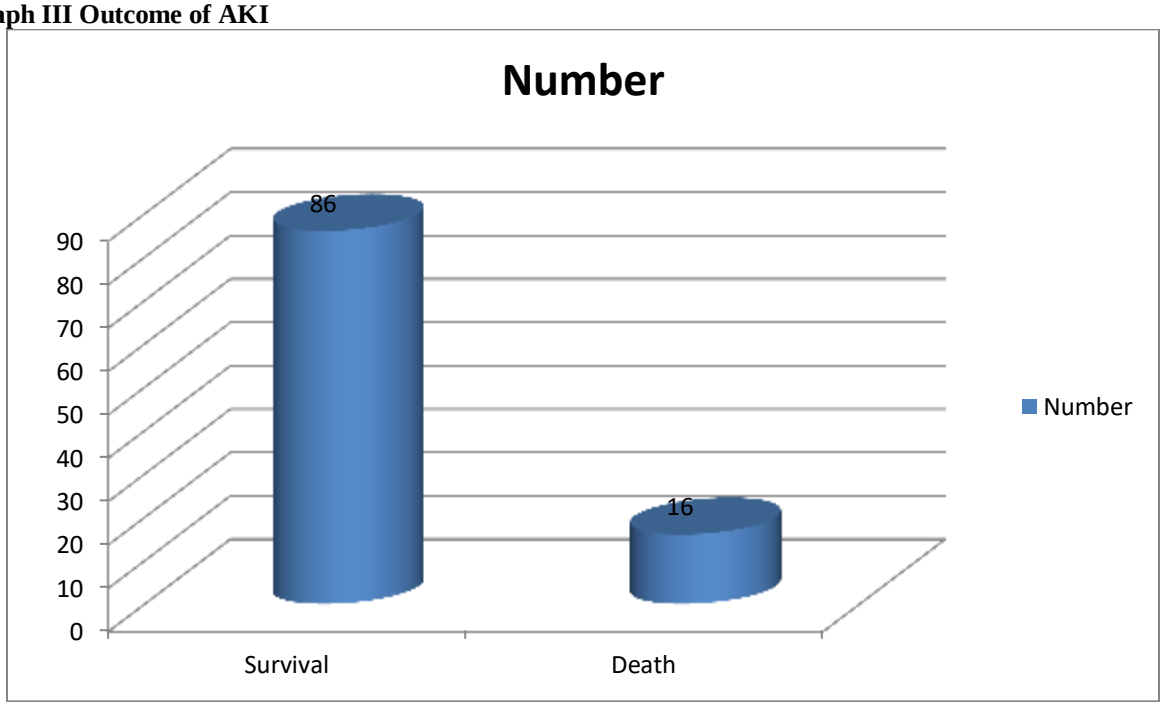
Biochemistry	Mean
Serum Urea (mg/dl)	145.6
Serum creatinine (mg/dl)	5.4
Serum sodium (meq/dl)	131.4
Serum potassium (meq/dl)	4.5

Table III shows that mean serum urea level in patients was 145.6 mg/dl, serum creatinine was 5.4 mg/dl, serum sodium was 131 meq/dl and serum potassium was 4.5 meq/dl.

Graph II Assessment of laboratory findings



Graph III Outcome of AKI



Graph III shows that out of 102 patients, 86 survived and 16 died.

DISCUSSION

AKI in the ICU has been a scourge and continues to be a cause of high mortality and morbidity. Incidences of AKI in ICU patients have been reported to be from 7% to 36%.[6] Symptoms and signs of extra-renal organ dysfunction were the commonest feature of diseases at admission to ICU.[7] AKI-related inpatient care is also associated with increased healthcare costs due to prolonged hospitalizations, additional investigations and the development of complications such as the need for renal replacement therapy (RRT), cardiovascular complications and re-admissions. The 2009 National Confidential Enquiry into Patient Outcomes and Death (NCEPOD) reported that 50% of patients who died

from AKI received suboptimal care and 14% of AKI was avoidable.[8] The present study assessed the cases of AKI in adults.

In present study, out of 102 patients, males were 62 and females were 40. Common comorbid conditions was diabetes in 67, hypertension in 54, CAD in 45, cerebrovascular disease in 12 and chronic obstructive pulmonary disease in 19. Anderson et al[9] 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.

We found that mean serum urea level in patients was 145.6 mg/dl, serum creatinine was 5.4 mg/dl, serum sodium was 131 meq/dl and serum potassium was 4.5 meq/dl. Out of 102 patients, 86 survived and 16 died. Nakamura et al[10] identified 574 patients in ICU. Mean age 44.87 ± 15.14 years and (n = 71; 57.1%) were males and (n = 53; 42.9%) were females. Out of 124 patients (50.80%; n = 63) had medical, (33.87% n = 42) had surgical and (15.32%; n = 19) had obstetric cause of admission in ICU. Of the 574 patients (12.02%; n = 69) had associated co morbidities, hypertension is the most common associated morbidities (4.7%; n = 27), others were diabetes mellitus (3.6%; n = 21), coronary artery disease (3.0%; n = 17), cerebrovascular disease (0.3%; n = 2), chronic obstructive pulmonary disease (0.3%; n = 2). The etiology of AKI was multi-factorial, sepsis were the most common cause observed in (69.64%; n = 39), hypotension (67.84%; n = 38), volume depletion (19.64%; n = 11), nephrotoxic drugs (64.28%; n = 36) patients. Multi organ system failure (MOSF) was noted in (29.03%; n = 36) patients. MOSF and sepsis were found to be significant adverse prognostic factors when multiple logistic regression analysis was done.

Conclusion

Authors found AKI has poor prognosis. Common comorbid conditions were diabetes, hypertension, CAD, cerebrovascular disease and chronic obstructive pulmonary disease.

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