

Epidemiological Spectrum of Acute Kidney Injury: A Retrospective Study from Tertiary Health Center

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Abstract: ***Introduction:** Acute kidney injury (AKI) represents renal manifestation of either local or systemic disease. Causal spectrum changes from place to place because of multiple factors like environment, socioeconomic status. It is responsible for morbidity and mortality of hospitalised patients. **Methods:** It was a retrospective study done at FMMC, Mangalore on patients admitted with AKI at FMMC between June 2017 and December 2017 fulfilling inclusion criteria. It was a time bound study. **Results:** Out of the total 360 patients included in the study, 225 are male (62.5%) and 135 are female (37.5%). Mean age of the patients was found to be 56.31 ± 17.88. Medical causes were found to be the source of acute kidney injury in 89.8% of cases & non medical causes form 10.2% of total cases. Out of the total cases sepsis remains the most common of acute kidney injury. Among medical causes, urinary tract infection remains the most common cause in this study. **Conclusion:** Sound knowledge of local causes of acute kidney injury is necessary to identify cases which can develop acute kidney injury. This study found sepsis as the most common cause of acute kidney injury. Early management of sepsis would help to treat acute kidney injury conservatively. Regular studies regarding local epidemiological spectrum of acute kidney injury are necessary to look for trend of diseases.*

Keywords: Acute Kidney Injury, Sepsis, Haemodialysis

1. Introduction

According to Kidney Disease: Improving Global Outcomes (KDIGO), Acute Kidney Injury (AKI) is defined as increase in serum creatinine of ≥ 0.3 mg/dl within 48 hours or 1.5 times increase in baseline serum creatinine level done within last 7 days or urine output ≥ 0.5 ml/kg/hr.⁽¹⁾ Acute kidney injury represents renal manifestation of either local or systemic disease. It can be because of many causes. Most of the data available regarding etiological spectrum are from developed countries. In developing countries like India very little data is available regarding etiological causes due to lack of proper reporting system.⁽²⁾ Moreover etiological causes of acute kidney injury are closely linked to environmental factors & socioeconomic factors so etiological causes vary from place to place.⁽³⁾ Studies done in different places found different spectrum of causes.^(4,5,6) In this study we want to study etiological spectrum of acute kidney injury in a tertiary health centre in Mangalore.

2. Materials & Methods

In this retrospective study we took all the cases of acute kidney injury admitted in the Father Muller Hospital, Kankanady over 6 months i.e., from June 2017 to December 2017 with fulfilling inclusion and exclusion criteria.

Inclusion Criteria

- 1) New onset uremic symptoms or anuria or oliguria.
- 2) Patients above 18 years with fulfilling KDIGO guidelines of AKI.

Exclusion Criteria

- 1) Known case of chronic renal diseases were excluded.

In this study will compare their creatinine levels at admission and discharge. The study was started after obtaining Institutional Ethics Committee Clearance.

3. Statistical Analysis

Statistical data analysis included mean, standard deviation, median, percentage. Frequency (Categorical) measurements are presented as numbers and percentage. All statistics were carried out using Statistical Package for Social Sciences (SPSS) version 25.0 for windows (SPSS Inc., Chicago.)

4. Results

Out of the total 360 patients included in the study, 225 are male (62.5%) and 135 are female (37.5%). Mean age of the patients was found to be 56.31 ± 17.88. Medical causes were found to be the source of acute kidney injury in 89.8% of cases & non medical causes form 10.2% of total cases. Out of the total cases sepsis remains the most common of acute kidney injury & of which urinary tract infection (23.3%) remains the most common cause followed by Pneumonia (16.94%), Gastroenteritis (14.44%). Out of the non medical causes Obstructive uropathy (2.5%) remains the most common cause.

Table 1: Medical Causes Of Acute Kidney Injury

Etiology of AKI (Medical Causes)	Frequency (%)
URINARY TRACT INFECTION	84 (23.3%)
PNEUMONIA	61 (16.94%)
GASTROENTERITIS	52 (14.44%)
LEPTOSPIROSIS	31 (8.61%)
CHRONIC LIVER DISEASE	25 (6.94%)
VIVAX MALARIA	14 (3.8%)
ACUTE PYELONEPHRITIS	8 (2.2%)
MALIGNANCY	8 (2.2%)
SNAKE BITE	7 (1.9%)

COPD	7 (1.9%)
ACUTE CORONARY SYNDROME	5 (1.38%)
ACUTE PANCREATITIS	5 (1.38%)
CONGESTIVE CARDIAC FAILURE	4 (1.1%)
IC BLEED	4 (1.1%)
FALCIPARUM MALARIA	3 (0.8%)
PARAQUAT	3 (0.8%)
DRUG INDUCED	2 (0.5%)
ACUTE RESPIRATORY DISTRESS SYNDROME	1 (0.27%)
LUNG ABSCESS	1 (0.27%)
ACUTE PULMONARY EDEMA	1 (0.27%)
PULMONARY THROMBOEMBOLISM	1 (0.27%)
METHANOL CONSUMPTION	1 (0.27%)

Table 2: Non Medical Causes of Acute Kidney Injury

ACUTE KIDNEY INJURY (NON MEDICAL CAUSES)	
OBSTRUCTIVE UROPATHY	9 (2.5%)
CELLUITIS	5 (1.38%)
GANGRENOUS FOOT	2 (0.5%)
NECROTISING FASCITIS	2 (0.5%)
INTESTINAL OBSTRUCTION	1 (0.27%)
GANGRENOUS BOWEL	1 (0.27%)
NON HEALING ULCER	1 (0.27%)

5. Discussion

In this study we took patients above 18 years presented with acute kidney injury as per KDIGO guidelines. Maximum patients were found to be between 51-59 years. In this study we found male population (62.5%) were more affected than female population (37.5%). Benich B et al.,⁽⁷⁾ study had similar pattern of sex distribution with males being 58% and females being 36%. Choudhary MK et al.⁽⁸⁾ study found to have 78% males and 22% female population. Out of the total cases, medical causes remains the most common cause which was in agreement with studies done at different places. Among medical causes, urinary tract infection remains the most common cause in this study. Study done by Ojha A et al.,⁽⁹⁾ found urinary tract infection was the most common source of sepsis. Study done by Kaul A et al.,⁽⁴⁾ found Gastroenteritis as the most common source of sepsis. Among non medical causes obstructive uropathy remains the most common cause. Diabetes followed by hypertension remains the most common co morbidities among the study subjects. Out of the total cases, 78.4% were managed conservatively and 21.6% required haemodialysis. This is in agreement with study done by Choudhary MK et al.⁽⁸⁾

6. Conclusion

Acute kidney injury (AKI) is a common condition in day to day practice. Most common causes changes from place to place. Sound knowledge of local causes of acute kidney injury and Renal Replacement Therapy (RRT) requiring causes will help in better management of acute kidney injury. This study found sepsis as the most common cause of acute kidney injury. This study also noted significant number of Leptospirosis cases presenting with acute kidney injury. Early management of sepsis would help to treat acute kidney injury conservatively. Regular studies regarding local epidemiological spectrum of acute kidney injury are necessary to look for trend of diseases.

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