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General Medicine

CLINICAL PROFILE AND OUTCOMES IN PATIENTS WITH ACUTE KIDNEY INJURY WITH AND WITHOUT UNDERLYING CO-MORBIDITIES.

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ABSTRACT

Aims and Objectives: To compare clinical profile and outcome in patients with acute kidney injury with respect to underlying co-morbidities.

Material and Methods: This is retrospective study of 30 patients with AKI admitted in SKNMC and GH between Jan 2018 to July 2018.Patients age>18 years were included and those who are already known case of chronic kidney disease were excluded from study.

Results: A total number of 30 cases with Acute Kidney Injury (AKI) admitted to SKNMC and GH, who met the inclusion criteria, are studied. Out of 30 patients 17 patients were male and 13 patients were female. Mean age of presentation was 56.8 years. Maximum patients (46.67%) were from elderly age group. There was male predominance (M:F -1.3:1). Most common cause of AKI was found to be Prerenal (50.9%). Maximum numbers of AKI patients in present study were oliguric (76.67%).Out of total AKI patients 22 had underlying comorbidity (Gr.A) and 8 had no co-morbidity (Gr. B). Patients with co-morbidities, 36.36% had DM, 27.27% had HTN, and 22.73% had chronic liver disease, 9.09% had IHD and 4.55% had COPD. In **Gr.A** 91% patients were more than 50 yrs old, M: F ratio 1.5:1, 72.8% were oliguric, 54.5% required dialysis, and 86.4 % required ICU management. In **Gr.B** 25 % were more than 50 yrs old, M: F ratio 1:1, 87.5% were oliguric, 37.55 required dialysis, and 37.5% required ICU management. In Gr.A and Gr.B , 54.5% &75% pre-renal, 36.5% & 25% renal , 9% & 0% had post renal as a cause of AKI respectively (P- 0.311). Morbidity (Residual Renal disease) and mortality was 50 % in Gr. A and 12.5% in Gr. B.

Conclusion: Patients more than 50yrs of age with underlying co-morbidities had significant risk of developing AKI ($P < 0.0003$).There was significant association between presence of co morbidies and requirement of ICU (P-0.007).The outcome was worse in patients with underlying co-morbidities though not statistically significant (P-0.06).

KEYWORDS : Acute Kidney injury, morbidity, mortality

INTRODUCTION:

According to the Acute Kidney Injury Network (AKIN), AKI is an abrupt loss in kidney function within 48 h, as defined by an increase in serum creatinine of 26.4 μmol/L (0.3 mg/dL) or more; a percentage increase in serum creatinine of more than 50% from baseline; or a reduction in urine output, oliguria (< 0.5 mL/kg hourly for > 6 h) [1,2].

AKI can be characterized by decline in glomerular filtration rate, retention of nitrogenous waste products and perturbation of the extracellular fluid volume, electrolytes and acid-base homeostasis. The severity of these changes are time sensitive, thus, early treatment may minimize the complications associated with AKI [3]. AKI is most often secondary to extra renal events in critically ill patients, specifically those that are hospitalized and are suffering from progressive degenerative diseases [4].

AKI has been shown to occur in 1% of patients admitted to the hospital and it has been shown that up to 7% of patients develop AKI during hospital stays [1, 5, 6]. The incidence of AKI in intensive care units (ICU) has been shown to range from 20% to 50% [7].

Damage to the kidneys, as a result of AKI, may be enhanced with the presence of co-morbidities and thereby complicate the course of illness and treatment. A study done on patients with hip fracture defined the incidence, risk factors and outcomes of AKI [8]. These patients who sought treatment for femur fracture and developed AKI showed an increase in inpatient morbidity, mortality (within 30 and 120 d) and length of hospital stay with multiple co morbidities [8].

Present study highlights the co-morbidities associated with the development of AKI including diabetes mellitus, hypertension, Iscemic heart disease and pre-morbid chronic liver disease and effects on outcomes of these patients.

AIMS AND OBJECTIVES:

To compare clinical profile and outcome in patients with acute kidney injury with respect to underlying co-morbidities.

MATERIAL AND METHODS:

This is retrospective study of 30 patients with AKI admitted in SKNMC and GH between Jan 2018 to July 2018.All patients' age >18 years who developed AKI during the study period were included. Already known case of chronic renal disease patients were excluded from study. Patients were divided into two groups depending on the presence or absence of co-morbidities. Demographic data and outcomes of the patients were studied. Data of all the patients were entered in an Excel sheet and analyzed. p value of < 0.05 was considered significant.

RESULTS:

A total number of 30 cases with Acute kidney Injury (AKI) admitted to SKNMC and GH who met the inclusion criteria are studied. Demographic and clinical profiles of all the patients included in the study are shown in Table No.1. Mean age of presentation was 56.8 years. Maximum patients (46.67%) were from elderly age group, (>61 years). (Table No. 2). There was male predominance, (M: F -1.3:1). Most common cause of AKI was found to be Prerenal (60%) whereas postrenal was least common (6.67%). Maximum numbers of AKI patients in present study were oliguric (76.67%) than non oliguric (23.33%). Patients with co-morbidities, 36.36% had DM, 27.27% had HTN, and 22.73% had chronic liver disease, 9.09% had IHD and 4.55% had COPD.

Table 1: Characteristics of patients with AKI

Variables		Values
Number of AKI patients	N	30
Mean age	years	56.8 years
Gender ratio	M:F	1.3:1
Cause of AKI (%)	Prerenal	60%
	Renal	33.33%
	Postrenal	6.67%

Output (%)	Oligouric	76.67%
	Non-oligouric	23.33%
Co-morbidities (%)	DM	36.36%
	HTN	27.27%
	IHD	22.73%
	CLD	9.09%
	COPD	4.55%

Table No. 2. Patients classified according to age groups

Age (Years)	No. of Patients	Percentage
<20	2	6.67%
21-30	3	10%
31-40	3	10%
41-50	1	3.33%
51-60	7	23.33%
>61	14	46.67%

Table No.3 Comparison of patients with or without co- morbidities.

Parameters		Pts with comorbidity (Gr.A)	Pts without Comorbidity (Gr. B)	Chi square value	P value	
AGE (YRS)	<50	2 (9%)	6(75)	13.03	0.00030	Significant
	>50	20(91%)	2(25)			
GENDER	M	13(59%)	4(50%)	0.197	0.6567	Not Significant
	F	9(41%)	4(50%)			
CAUSES	PRE-R	12(54.5%)	6(75%)	1.022	0.3118*	Not Significant
	RENAL	8(36.5%)	2(25%)			
	POST-R	2(9%)	0			
URINE OUTPUT	OLIGUR	16(72.8%)	7(87.5%)	0.715	0.3975	Not Significant
	NONOLI	6(27.2%)	1(12.5%)			
ICU REQUIRE	YES	19(86.4%)	3(37.5%)	7.163	0.0074	Significant
	NO	3(13.6%)	5(62.5%)			
DIALYSIS REQUIRE	YES	12(54.5%)	3(37.5%)	0.681	0.4089	Not Significant
	NO	10(45.5%)	5(62.5%)			
OUT-COME	CURED	11(50%)	7(87.5%)	0.715	0.3975*	Not Significant
	RRD	5(22.73%)	0			
	DEATH	6(27.27%)	1(12.5%)			

Out of total AKI patients, 22 patients had underlying comorbidities (Gr.A) and 8 had no co-morbidities (Gr. B).In **Gr A** maximum (91%) patients were from age group >50 years, there was male dominance (59%), almost 72.8% patients were oliguric, 54.5% patients required dialysis and 86.4% patients required ICU management .In **Gr B** maximum (75%) patients were from age group <50 years, there was equal gender distribution (M:F-1:1), almost 87.5% patients were oliguric but maximum number of patients (62.5%) did not require dialysis and ICU admission. In both groups Prerenal was the most common cause of AKI, 54.4% & 75% respectively.

In Gr A, 50% patients cured from AKI, 22.73% remained with residual renal damage and 27.27% succumbed to their illness. In Gr B, there was good outcome with 87.5% cure rate and 12.5% mortality with no patient of residual renal damage.

DISCUSSION

In present study, Mean age of presentation was 56.8 years as maximum patients were from elderly age group (Table No.2).Cause of elderly patients having more involvement in AKI may be due to less reserve of organs and increased severity of the underlying disease process. Similar results were seen by Picard et al (mean age 59.5 years) and Mataloun et al[10] (mean age 55.3 years).

Out of 30 patients, 17 (56.67%) patients were male and 13 (43.33%) patients were female. There was male predominance (M: F -1.3:1). The results are comparable with other studies done by Picard et al[9] (M: F-1.4:1) and Olaga et al[11] (M:F-1.5:1).

Most common cause of AKI was found to be Prerenal (60%) whereas postrenal was least common (6.67%).The reasons behind it is due to more incidences of sepsis, Acute gastroenteritis and tropical illnesses in our set up. late presentation and inadequate rate of resuscitation may be the reasons for this high incidence of prerenal causes of AKI. There was less number of surgical cases and hence less number of causes causing postrenal etiology. Maximum numbers of our patients were from Medicine ward and ICU, hence the higher incidence of Prerenal and renal causes of AKI. Similar results were found in other study done by Balushi et al. [(12)] (Table No.5)

Table No.4 Causes of AKI

AkI	Balushi et al	Present study
Prerenal	50.9%	60%
Renal	44.5%	33.33%
Postrenal	4.6%	6.67%

CONCLUSION:

Patients more than 50yrs of age with underlying co-morbidities had significant risk of developing AKI (P < 0.0003). There was significant association between presence of co-morbidies and requirement of ICU management (P-0.007). The outcome was worse in patients with underlying co-morbidities though not statistically significant (P-0.06).

Thus patients more than 50 years of age having co-morbidities are at higher risk of developing AKI if the develop critical illness. Also patients with co-morbidities who develop AKI require significantly more ICU management and also have a trend towards worse outcomes.

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