



## A CLINICAL STUDY OF ETIOPATHOGENESIS OF ACUTE KIDNEY INJURY PATIENTS, ADMITTED IN MEDICAL INTENSIVE CARE UNIT

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**ABSTRACT** **BACKGROUND:** Before the advancement of modern medicine acute renal failure might be referred to as "UREMIC POISONING". ARF due to ATN (acute tubular necrosis) was recognized in the 1940 in UK. Introduced by acute kidney injury network (AKIN), specific criteria exist for the diagnosis of AKI- Rapid time course (<48hrs), Reduction of kidney function, rise in s. cr., absolute increase in s. cr. Of  $\geq 0.3$ mg/dl, percentage increase in s. cr. Of  $\geq 50\%$ , reduction in urine output defined as  $< 0.5$ ml/kg/hr for more than 6 hr.

**AIMS AND OBJECTIVES:** 1- Analyses the principal causes of AKI admitted in medical intensive care unit, 2- To study the correlation of etiology and outcome of the admitted patient in MICU with AKI.

**MATERIALS AND METHOD:** The present study was carried out among patients of MICU of sanjay Gandhi hospital Rewa (M.P.). 319 AKI pts has been taken of different etiology and analyze there prevalence and prognostic value

**RESULTS:** the most common etiology of AKI is sepsis (31.03%) followed by GI fluid loss (18.99%), malaria (14.73%), cardiogenic shock (14.42%) etc. some pts also have post renal pathology and hepatorenal syndrome (HRS) (4.07%). among the etiological point of view the HRS has highest mortality (69.23%) followed by sepsis (63.63%) and cardiogenic shock (63.04%).

**CONCLUSION:** the most common etiology of AKI in MICU pts is septicemia and acute GI fluid loss, malaria is also significant contributory in India.

**KEYWORDS :** MICU, acute kidney injury

### Introduction:

acute kidney injury (AKI) is characterized by a rapid decline in glomerular filtration rate (GFR) over hours to days. In medical ICU for purpose of diagnosis and management cause of ARF are generally divided into three major categories:

1. Disease that cause renal hypo perfusion (pre renal AKI) (~55%).
2. Disease that directly involve the renal parenchyma (renal AKI) (~40%).
3. Disease associated with urinary tract obstruction (post renal AKI) (~5%).

The pattern of acute renal failure in India is changing albeit at a slower pace compared to that on developed countries. The most common etiologic factor of AKI in MICU is sepsis followed by acute diarrhea, malaria (in India), cardiogenic shock and obstructive uropathy. In 2004 the Acute Dialysis Quality initiative (ADQI) work group set forth a definition and classification system for ARF, described by the acronym RIFLE (Risk of renal dysfunction, Injury to the kidney, Failure or Loss of kidney function, and End stage kidney disease)

**Table no.1. showing various stages of acute kidney injury**

Stage	GFR Criteria	Urine output criteria	Probability
Risk	S.Creat. increased $\times 1.5$ OR GFR decreased $> 25\%$	UO $< 0.5$ ml/kg/hr. $\times 6$ hrs.	High sensitivity (risk $>$ injury $>$ failure)
Injury	S.Creat. increased $\times 2$ OR GFR decreased $> 50\%$	UO $< 0.5$ ml/kg/hr. $\times 12$ hrs.	High sensitivity (risk $>$ injury $>$ failure)
Failure	S.Creat. increased $\times 3$ OR GFR decreased $> 75\%$ OR S.Creat. $\geq 4$ mg/dl Acute rise $\geq 0.5$ mg/dl	UO $< 0.3$ ml/kg/hr. $\times 24$ hrs. (oliguria) OR Anuria $\times$ 12hrs.	High sensitivity (risk $>$ injury $>$ failure)
Loss	Persistent acute renal failure: complete loss of kidney function $> 4$ weeks.	High sensitivity	

ESKD	Complete loss of kidney function $> 3$ months	High sensitivity
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### MATERIALS AND METHOD:

present study was carried out among patients of MICU sanjay Gandhi hospital Rewa (M.P.). total three hundred nineteen AKI patient in MICU has been taken as sample during the period of one year from January 2017 to December 2017.

Inclusion criteria : 1- patient admitted in MICU, 2- age more than 15 years, 3- serum creatinine level should be more than 0.3 mg/dl. 4- rise from base line or more than 1.5mg/dl atleast one time after admission in MICU.

Exclusion criteria : 1- age less 15 yrs, 2-Known case of chronic renal failure 3- Serum creatinine never become more than 1.5mg/dl during admission, 4-Any surgical case of ARF apart from admitted in MICU due to predominantly medical cause.

Diagnostic criteria of AKI- 1. Elevation of serum creatinine should be more than 0.3 mg/dl rise from base line or more than 1.5mg/dl within 48 hr of admission, 2. Reduction in urine output less than 0.5ml/kg/hr for more than 6 hr.

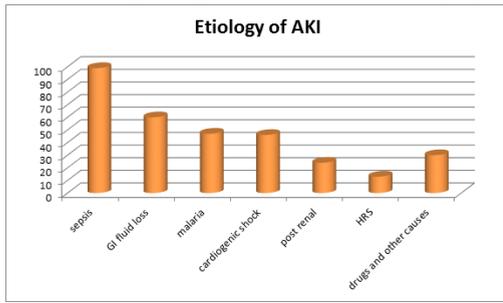
### RESULTS :

In the present study sepsis was most common cause of the AKI in MICU pts (31.03%), followed by GI fluid loss (18.99%), malaria (14.73%), cardiogenic shock (14.42%), post renal (7.59%), HRS (4.11%).

**Table no. 2 showing frequency of various etiological factors for AKI**

S.No.	Etiological factor	No. of Patients	% (percentage)
1	Sepsis	99	31.03
2	GI fluid loss	60	18.99
3	Malaria	47	14.73
4	Cardiogenic shock	46	14.42
5	Post renal	24	7.52
6	HRS	13	4.07
7	Drugs and other causes	30	9.40

Graph no.1 showing etiological factors for acute kidney injury



The death was highest in HRS group (69.23%) followed by sepsis (63.63%), cardiogenic shock (63.04%) and malaria. The lowest mortality was in GI fluid loss mostly due to fluid management

Table no.3- showing association of etiology and death in AKI patients

Etiology	Total	Death	%
Sepsis	99	63	63.63
GI fluid loss	60	6	10
Malaria	47	23	48.93
Cardiogenic shock	46	29	63.04
Post renal	24	7	29.16
Drugs and other causes	30	8	26.66
HRS	13	9	69.23

**Discussion:**

In this present study we shout to describe the etiology and their prognostic value in AKI pts admitted in MICU. In accordance with our study, shigehikouchino et al also reported septic shock is the most common(47.5%) cause of development of AKI in ICU and had 60% mortality(1) . Malaria is also a common cause of AKI , Mehta et al reported in malaria 5.9% of AKI with 29% mortality(2) ,in our study incidence of AKI due to malaria was 15% and death was 48%. The difference due to late presentation of the patients from periphery and higher epidemicity of falciparum . Kumar set al had reported acute renal failure due to acute diarrheal disease in 54 patients with mortality of 53.7% , the main cause of death is due to late presentation (3) . In our study 60 pts with GI fluid loss with 10% death probably due to good fluid electrolyte management and public awareness about oral rehydration therapy. Maria koreny et al studied 118 pts of AKI following cardiogenic shock shown 87% mortality(4), in our study 46 pt with 63 % mortality.

**CONCLUSION:**

the most common etiology of AKI in MICU pts is septicemia and acute GI fluid loss, malaria is also significant contributory in India. Mortality in cardiogenic shock and sepsis is nearly equal followed just after HRS.

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