

## ABSTRACT

Tropical AKI refers to the acute kidney injury occurring in association with diseases which are particularly prevalent in tropical countries.

Early recognition and management of these predominantly infectious or toxin mediated diseases prevents progression of AKI.

Immediate mortality as well as future development of chronic kidney disease may be largely prevented

Tropical nephropathies may be broadly classified into

- Infective
- Toxic.

Infections leading to AKI may be

- Bacteria
- Viral
- Protozoal.

Among bacteria, the commonly encountered infections are typhoid, leptospirosis, gram negative septicemia, tetanus and acute dysentery with severe dehydration.

The common viral offenders are dengue virus, hepatitis virus and enterovirus.

Malaria, kalaazar and filariasis are the common tropical protozoal offenders which may lead to AKI.

The toxins leading to AKI are

- Scorpion sting and
- Snake bite.

**AIMS:**

- To study the Immediate outcome and proportion of AKI in children admitted with acute febrile illness/envenomation
- To study the clinico pathological spectrum and biochemical profile of AKI in children admitted with acute febrile illnesses or envenomation

**OBJECTIVES:**

To find

- Proportion of Tropical AKI in children hospitalized at an urban referral hospital
- Etiological profile of Tropical AKI in children
- Clinicopathological spectrum of AKI in children
- Immediate Outcome of children with tropical AKI

## **METHODOLOGY**

STUDY DESIGN : Cohort Study

STUDY PLACE : PICU Coimbatore Medical college Hospital,  
Coimbatore

STUDY PERIOD : September 2016 to September 2017

STUDY POPULATION : Children aged between 1 month-12 years admitted  
for acute febrile illness satisfying AKIN/RIFLE criteria for AKI

### **INCLUSION CRITERIA:**

All children aged between 1 month-12yrs with fever or with features of  
envenomation requiring hospitalization satisfying AKIN/p RIFLE criteria.

### **EXCLUSION CRITERIA:**

Children with - Obstructive Uropathy  
Post streptococcal glomerulonephritis  
Idiopathic Nephrotic syndrome  
Vesicoureteric reflux  
Inborn error of metabolism  
Diabetic Mellitus  
Congenital malformations of the kidney  
Chronic kidney disease & Malignancy

## RESULTS

- A total of 50 children with AKI were studied. Out of **50** children , tropical AKI was more common in 5-12 yr age group(46%) .There were 19 children in the 1-5 yr age group (38%) and 8 children in 1month-1 year (16%) age group (16%).
- Out of 50 children, 31(62%) were girls,19 (38%) were males.
- Out of 50 children with AKI , 31 children(62%) were presented with the initial symptom of fever for more than 5 days duration,8 children (16%) had fever of less than 5 days duration,10 children (20%)had a history of snake bite and 1 child had scorpion sting (2%).This was a statistically significant association between fever and AKI ( P value < 0.05).
- Out of 50 children with AKI, 30(60 %) children had no abdominal pain and 20 children (40%) presented with abdominal pain. However there was no statistically significant association between AKI and abdominal pain (P value > 0.05).
- AKI was more common in children with blood urea values between 40-100 (52%) compared to levels more than 100 (48%). There was no statistically significant association between AKI and blood urea values (0.826).
- Serum creatinine level found to be elevated to 3 times the normal in the children who had AKI.

- **Out of 50 children with AKI, 20 children (40%)** had serum creatinine elevation 3 times from baseline, 11 children (22%) had serum creatinine elevation 2 times from baseline, 19 children (38%) had serum creatinine elevation 1.5 times elevated from baseline. A statistically significant association was found between elevated serum creatinine levels and acute kidney injury
  
- AKI based on urine output as per RIFLE criteria
  - 40 % children in RISK category
  - 34% Children in Failure category
  - 26% children in Injury category
  
- The results were compared using chi square test and the P value found to be significant (p value < 0.02).
  
- Out of 50 children with AKI, 23(46%) children needed dialysis and 27(54%) children did not need dialysis. The results were compared using chi square and the p value found to be 0.65. However these results were not found to be statistically significant (P value 0.65).
  
- Sepsis was the most common co-morbidity associated with AKI (44 %) this result was found to be statistically significant.
  
- Out of 50 children with AKI, 20 children had Dengue fever (40 %), 9(18%) children had snake bite, 6(12%) children had acute encephalitis, 6(12%) had

enteric fever 4 (8%) children had pneumonia, 2 children had leptospirosis and 1 had scorpion sting. These results were found to be statistically significant (P value 0.03).

- Among 50 people with AKI, 40(80%) recovered and 10(20%) died and the P value found to be 0.045 which was found to be statistically significant.
- Recovery was 23 % in 5-12 year age group: among the 8 children aged 1 month-1 year 6 were recovered, 2 died. This was found to be statically significant (P value=0.01).
- When urine output was considered, 20 children with urine output in RISK criteria recovered; 9 children in FAILURE criteria recovered. 11 children in INJURY criteria recovered
- No child in RISK criteria died 2 children in INJURY criterion and 8 children in FAILURE criterion died
- Out of 50 children 23 children need peritoneal dialysis and among them, 15 recovered & 8 children were died. In 27 children there was no need for dialysis, but 2 of them died.
- Those children with serum creatinine 1.5 times elevated from the baseline had more recovery than those children with serum creatinine 3 times from the baseline.

- AKI caused by snake bite had remarkable recovery followed by dengue fever. However these results were not statistically significant(P value=0.606).
- Out of 50 children with AKI, 22 children in RISK criterion,7 children in INJURY criterion, 21 children in FAILURE criterion according to p RIFLE criteria More children belonging to the recovery than children in FAILURE category. This was found to be statistically significant.

## **CONCLUSION**

Early initiation of treatment goes a long way in prevention of AKI. Improvement in environmental sanitation and community health Prevent Dengue fever which is the major cause of AKI (Dengue) in the present study. Early recognition and initiation of treatment will cause 100% recovery from AKI. Bacterial sepsis is the most common co-morbidity associated with AKI.

## **KEYWORDS:**

Tropical disease, acute kidney injury, rifle criteria