RESEARCH ARTICLE

CLINICAL PROFILE OF ACUTE KIDNEY INJURY IN ACUTE FEBRILE ILLNESS WITH THROMBOCYTOPENIA

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Manuscript Info

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Abstract

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Background: Acute febrile illness is defined as an acute febrile syndrome with oral temperature over 37.5 degree Celsius within last 24 hours and less than 2 weeks of duration with non-specific Symptoms that will not help us to localize to a particular system.

Aim: The aim of this study was to- Study the Incidence and Spectrum of acute kidney injury in acute febrile illness with Thrombocytopenia.

Materials and Methods: Observational cross sectional study of admitted patients who meet the inclusion and exclusion criteria in Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar, from admission to discharge.

Results: Stage I acute kidney injury accounts for 84 cases, stage II accounts for 14 cases & stage III accounts for 2 cases. Stage I(84%) acute kidney injury is the most common and majority of cases among the various acute febrile illness with thrombocytopenia compared to stage II(14%) and stage III (2%).

Conclusion: Most of the cases had stage I acute kidney injury and recovered completely at discharge. Dengue fever is the most common cases in this study Out of 100 patients >90 mL/min/1.73 m2 is seen in 70 patients, >60 mL/min/1.73 m2 is seen in 16 patients, >15 mL/min/1.73 m2 is seen in 13 patients and 1 patient died.

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Introduction:-

Is one The non-specific symptoms are like fever, rashes body pain, loose stools, vomiting, generalized body swelling, decreased urine output, headache, cough and breathlessness[1]. Acute febrile illness with Thrombocytopenia is one of the most common causes of morbidity and mortality in Tropical countries like India[2-6]. Acute kidney injury (AKI) due to Fever with Thrombocytopeniaof the frequent, potential and fatal complication and cause formorbidity and mortality. This situation demands a better syndromic approach, early treatment and prevention of complications.

AKI is common in diseases with Fever with Thrombocytopenia like Malaria, Dengue, Typhoid, Rickettsial fever, Leptospira and Chikungunya infections[10-13]. The acute kidney injury in case of tropical infections is mainly due to

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prerenal and intrarenal causes. Emergence of risk factors like international travel, migration, urbanization and global warming may be the cause for increased incidence of tropical infections associated with thrombocytopenia, thus leading to increased incidence of acute kidney injury[1,2].

Aim:-
The aim of this study was to- Study the Incidence and Spectrum of acute kidney injury in acute febrile illness with Thrombocytopenia.

Materials And Methods:-
Study Design-
This study was a Observational cross sectional study of admitted patients who meet the inclusion and exclusion criteria in Chalmeda Anand Rao Hospital from admission to discharge.

Study Centre-
Data for the study will be collected from the patients admitted in Department of General Medicine at Chalmeda Anand Rao Hospital with acute febrile illness with thrombocytopenia.

AKI is common, harmful, and potentially treatable. Even a minor acute reduction in kidney function has an adverse prognosis. Early detection and treatment of AKI may improve outcomes. As per the recent KDIGO[4,5,15,16] AKI Guidelines AKI is defined as any of the following :
•   Increase in SCr by ≥0.3 mg/dl (≥26.5 μmol/l) within 48 hours; or
•   Increase in SCr to ≥1.5 times baseline, which is known or presumed to have occurred within the prior 7 days; or
•   Urine volume <0.5 ml/kg/h for 6 hours.

Method of collection of data
Sample size:
100 cases which meet the inclusion and exclusion criteria will be studied for 12 months.

Study Duration-
The Study duration was from January 2022 to December 2022.

Inclusion Criteria
Patients above 18 years of age having acute febrile illness with platelet count less than 1.5 lakhs/cumm with acute kidney injury due to Dengue, Malaria, Leptospira infection, Ricketssial fever, Typhoid and Chikungunya will be taken after laboratory confirmation.

Exclusion Criteria
1. Pregnant women.
2. Snake bite.
3. Bacterial sepsis– Clinical and Radiological features suggestive of pyelonephritis, pneumonia, meningitis, gastroenteritis, acute viral hepatitis & intra-abdominal abscess.
4. Immunocompromised.
5. Inherited thrombocytopenia, chronic liver disease.
6. Patients below 18 years.

Ethical Approval-
This study was reviewed and approved by Institute Ethics Committee, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar.

Statistical Analysis
The data was collected from the in-patients and analyzed, the results are tabulated.

A total number of hospitalized Patients of Acute febrile illness with Thrombocytopenia is studied for 12 months period and to correlate the development and spectrum of acute kidney injury among them and its outcome is measured.

If baseline creatinine is not known, we have considered as 0.8. We have also seen the reduction of creatinine in the hospital stay till discharge for considering a case as acute kidney injury.
Outcome is measured by eGFR using MDRD formula at discharge of the patient and divided into three groups,
1. Complete recovery: >60ml per min.
2. Partial recovery: 60-15 ml per min.
3. No recovery: <15 ml per min.
4. Death.

Results:-
We evaluated 100 patients who were having acute kidney injury in acute febrile illness with thrombocytopenia and studied their outcome till discharge. Acute kidney injury is one of the important complications of acute febrile illness with thrombocytopenia. This study reports on severity and spectrum of Acute kidney injury among the various acute febrile illness with thrombocytopenia for the span of 12 months from January 2022 to December 2022, its management & outcome till discharge.

In this study we have included a total number of 100 patients of acute kidney injury with thrombocytopenia. Among them minimum age of case was 18 years, whereas maximum age of presentation of elderly age group was 65 years. Mean age group was 36.5 +/- 9.7 years. Most common age of presentation was middle age group. In this study out of total 100 patients 38(38 %) were female patients and 62(62%) were male patients.
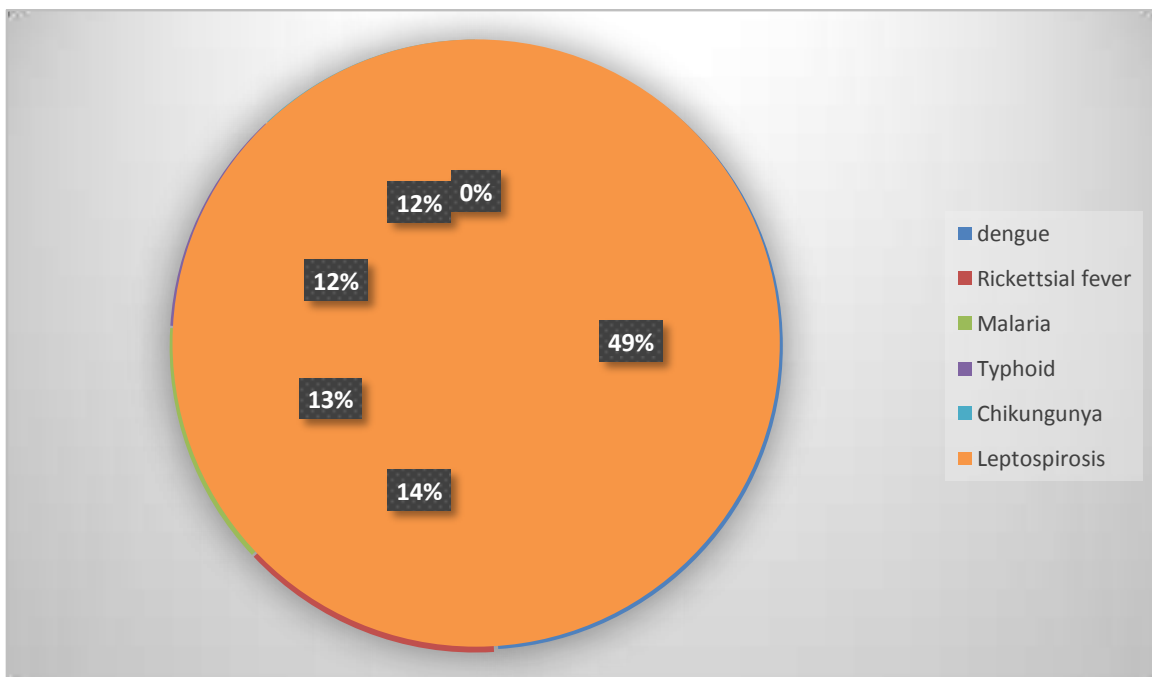

Figure 1:- Distribution of cases based on disease ratio.

Dengue fever were 49(49%) cases, Rickettssial fever were 14(14%) cases, Malaria (Plasmodium falciparum, Plasmodium vivax and mixed) were 13(13%) cases, Chikunguyna cases were 12(12%), Typhoid cases were 12(12%).

Stage I acute kidney injury accounts for 84 cases, stage II accounts for 14 cases & stage III accounts for 2 cases. Stage I(84%) acute kidney injury is the most common and majority of cases among the various acute febrile illness with thrombocytopenia compared to stage II(14%) and stage III (2%).

A similar study done by Jayalal Jayapalan Nair et al[1] showed that the proportion of Acute kidney injury was 54%. The most common cause of Acute kidney injury stage 1 was Dengue fever, stage 2 and 3 was Leptospirosis.

Table 1:- Distribution Of Cases Based On Disease And Platelet Count.

DIAGNOSIS							
Platelet count	Chikungunya IGM +VE	Dengue NS1 +VE	Malaria PS +VE	Typhoid O +VE	Weil-Felix +VE	TOTAL	P-Value
<50000	5 12.8%	21 53.8%	3 7.7%	6 15.4%	4 10.3%	39 100%	
50000-100000	4 12.1%	18 54.5%	6 18.2%	1 3.0%	4 12.1%	33 100%	
>100000	3 10.7%	10 35.7%	4 14.3%	5 17.9%	6 21.4%	28 100%	
TOTAL	12 12.0%	49 49%	13 13%	12 12%	14 14%	100 100%	0.435

Dengue fever was the most common cases in this study and most of them had stage I acute kidney injury secondary to dehydration, one patient had stage III acute kidney injury & required RRT 3 sittings and recovered to stage II acute kidney injury at discharge. Rickettssial fever was the only acute febrile illness with thrombocytopenia in this study with majority of stage II acute kidney injury and one patient required RRT and died after 1 sitting of SLED. Among other acute febrile illness with thrombocytopenia like Chikungunya, typhoid fever and malaria, majority of cases had stage I acute kidney injury and recovery was complete at discharge without requiring RRT in the course of treatment.

We calculated the eGFR at discharge as the prognostic marker of acute kidney injury leading to chronic kidney disease in future14. We used the 100 patients >90 mL/min/1.73 m2 is seen in 70 patients, >60 mL/min/1.73 m2 is seen in 16 patients, >15 mL/min/1.73 m2 is seen in 13

The management of acute febrile illness with thrombocytopenia cases was followed up till discharge from admission. About 98 cases were managed conservatively with fluid correction and rest 2 cases were in need of renal replacement therapy and were given. Among those of conservative management all were recovered [partially- 14 (eGFR 15-60ml/min) & completely- 84(eGFR >60ml/min)] and among renal replacement therapy cases, one recovered after 3 sitting of RRT of Dengue fever and another case died after 1 sitting RRT of Rickettssial fever.

Conclusion:-
Most of the cases had stage I acute kidney injury and recovered completely at discharge. Dengue fever is the most common cases in this study Out of 100 patients >90 mL/min/1.73 m2 is seen in 70 patients, >60 mL/min/1.73 m2 is seen in 16 patients, >15 mL/min/1.73 m2 is seen in 13 patients and 1 patient died.

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References:-

1.   Jayalal Jayapalan Nair, Ajay Bhat, Mangalore Venkatraya Prabhu. A Clinical Study of Acute Kidney Injury in Tropical Acute Febrile Illness. J Clin Dig Res 2016;10:OC01-5.

2.   Gopal Basu et al. Acute kidney injury in tropical acute febrile illness in a tertiary care centre—RIFLE criteria validation Nephrol Dial Transplant 2011;26: 524–31.

3.   Elizabeth De et al. Acute kidney injury in a tropical country: a cohort study of 253 patients in an infectious diseases intensive care unit, Rev Soc Bras Med. 2014;47(1):86-9.

4.   Liese C. Koopmans et al. Acute kidney injury in imported Plasmodium falciparum malaria. Malar J 2015;14:523-5.

5.   Kumar V et al. Scrub Typhus Is an Under-recognized Cause of Acute Febrile Illness with Acute Kidney Injury in India. PLoS Negl Trop Dis 2014;8:2065-2.

6.   João Fernando Picollo Oliveiraand Emmanuel A. Burdmann. Dengueassociated acute kidney injury.Clin Kidney J 2015;8(6):681–5.

7.   Susilawati   TN,   McBride   WJ. Undiagnosed undifferentiated fever in Far North Queensland, Australia: a retrospective study. International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases. 2014;27:59-64.

8.   Phuong HL, de Vries PJ, Nagelkerke N, Giao PT, Hung le Q, Binh TQ, et al. Acute undifferentiated fever in Binh Thuan province, Vietnam: imprecise clinical diagnosis and irrational pharmaco-therapy. Tropical medicine & international health : TM & IH. 2006;11(6):869-79.

9.   Joshi R, Kalantri SP. Acute undifferentiated fever: management algorithm. Update on Tropical Fever. 2015:1-4.

10.   Rothman AL, Ennis FA. Immunopathogenesis of dengue hemorrhagic fever. Viral 257:1–6 1999.

11.   Mittal G, Ahmad S, Agarwal RK, Dhar M, Mittal M, Sharma S. Aetiologies of acute undifferentiated febrile illness in adult patients–An experience from a tertiary care hospital in Northern India. JCDR. 2015;9(12):22-4.

12.   Singh R, Singh SP, Ahmad N. A study of etiological pattern in an epidemic of acute febrile illness during monsoon in a tertiary health care institute of Uttarakhand, India. JCDR. 2014;8(6):1-3.

13.   Rani RV, Sundararajan T, Rajesh S, Jeyamurugan T. A study on common etiologies of acute febrile illness detectable by microbiological tests in a tertiary care hospital. Int J Curr Microbiol App Sci. 2016;5(7):670-4.

14.   Aggarwal HK, Jain D, Chhabra P. Kidney Injury in Tropical Infections, Nephrology, Chapter 126:597-99

15.   Koopmans LC, Wolfswinkel ME, Hesselink DA, Hoorn EJ, Koelewijn R, Hellemond JJ, Genderen PJ. Acute kidney injury in imported Plasmodium falciparum malaria.Malaria journal. 2015;14(1):523-9.

16.   Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group. KDIGO clinical practice guideline for acute kidney injury. Kidney Int. 2012;2:1–138.