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Clinical Profile of Acute Kidney Injury in Acute Febrile Illness with Thrombocytopenia

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Abstract
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[7,8,9,11]. 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[2,3,4,5,6]. Acute kidney injury (AKI) due to Fever with Thrombocytopenia is one of the frequent, potential and fatal complication and cause for morbidity 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[10,11,12,13]. The acute kidney injury in case of tropical infections is mainly due to 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].
Keywords: *Acute Kidney Injury, Acute Febrile Illness, Tropical Disease.*

Aims and Objectives

The aim & objective of this study is to- Study the Incidence and Spectrum of acute kidney injury in acute febrile illness with Thrombocytopenia.

Materials and Methods

Source of data

Study Design: Observational cross sectional study of admitted patients who meet the inclusion and exclusion criteria in SSIMS & RC hospital from admission to discharge.

Study Area: Data for the study will be collected from the patients admitted in Department of General Medicine at SS institute of medical sciences and research Centre, Davangere 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 (including sampling procedure, if any)

Sample size: The cases which meet the inclusion and exclusion criteria will be studied for 18 months.

Study Duration: 18 months.

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

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

Methods

Proposed method of statistical analysis

The data is collected from the inpatients of SS institute of medical science and research centre will be analyzed, the results will be tabulated.

Methodology

A total number of hospitalized Patients of Acute febrile illness with Thrombocytopenia is studied for 18 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,

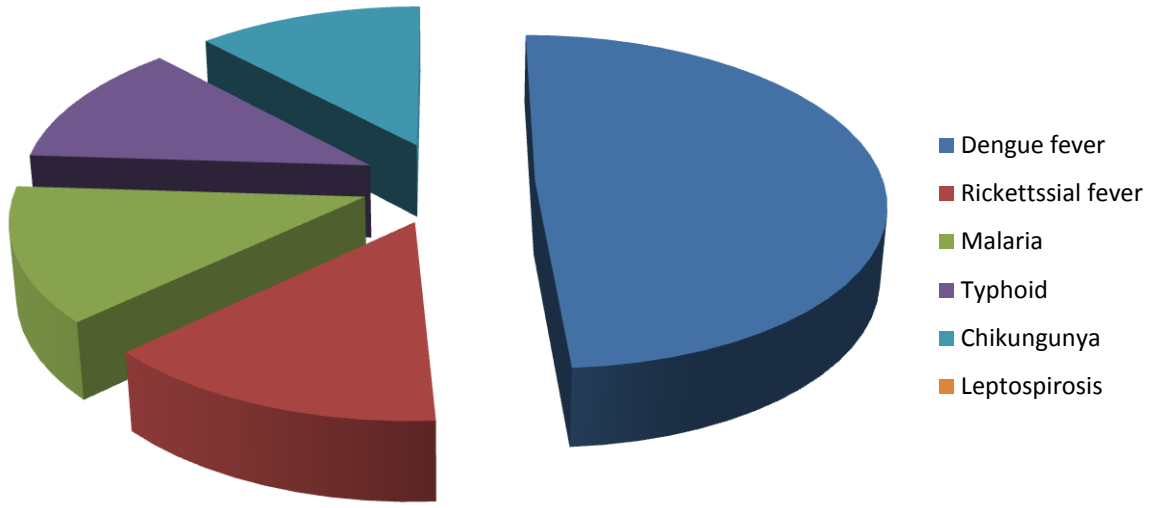
1. Complete recovery: >60ml per min.
2. Partial recovery: 60-15 ml per min.
3. No recovery: <15 ml per min.
4. Death.

Results

The present observational cross sectional study was carried out in the Department of general medicine, SSIMS & RC, Davangere. 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 18 months from 2016 to 2018, 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 8 (Table 8) Distribution of cases based on disease ratio

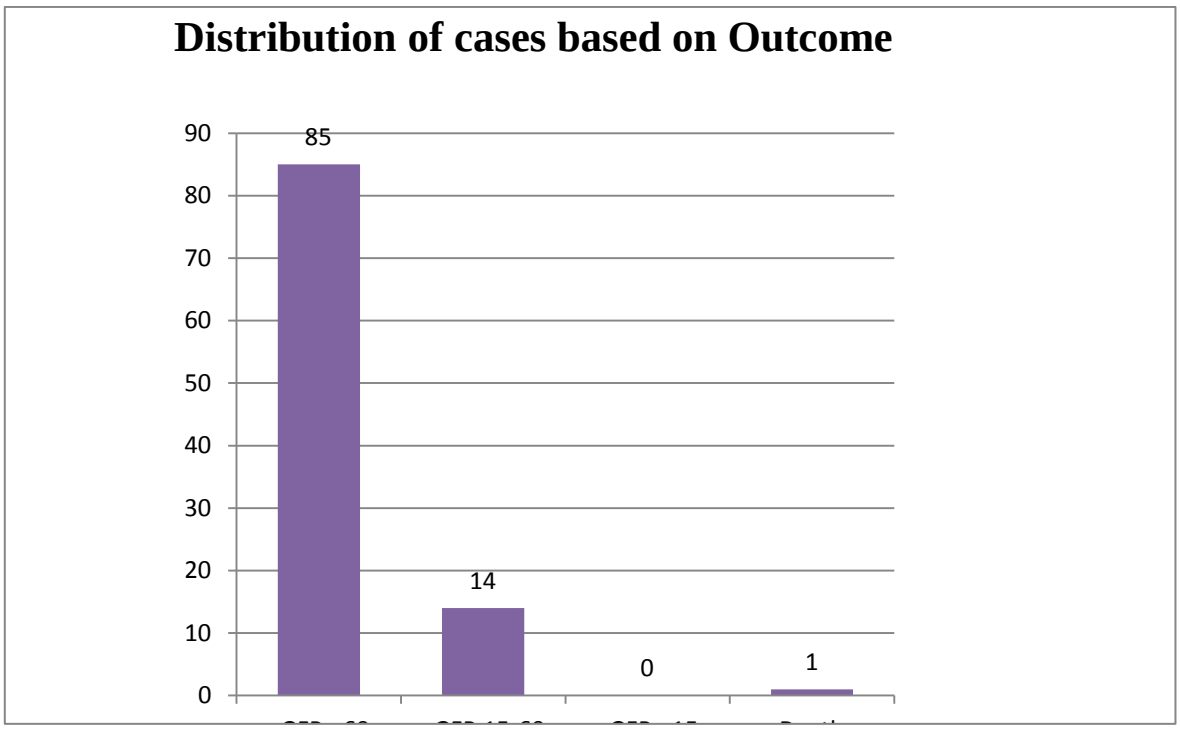


Dengue fever were 49(49%) cases, Rickettssial fever were 14(14%) cases, Malaria (Plasmodium falciparum, Plasmodium vivax and mixed) were 13(13%) cases, Chikunguyna cases were 12(12%), Typhoid cases were 12(12%). Stage I acute kidney injury accounts for 84 cases, stage II accounts for 14 cases & stage 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%).

Platelet count	Diagnosis					Total	p value
	CHIKUNGUNYA IgM +VE	DENGUE NS +VE	MALARIA PS +VE	TYPHOID O +VE	WEIL FELIX +VE		
<50000	5	21	3	6	4	39	0.435
	12.8%	53.8%	7.7%	15.4%	10.3%	100.0%	
50000-100000	4	18	6	1	4	33	
	12.1%	54.5%	18.2%	3.0%	12.1%	100.0%	
>100000	3	10	4	5	6	28	
	10.7%	35.7%	14.3%	17.9%	21.4%	100.0%	
Total	12	49	13	12	14	100	
	12.0%	49.0%	13.0%	12.0%	14.0%	100.0%	

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 future[14]. We used the discharge creatinine to calculate the eGFR. Out of 100 patients >90 mL/min/1.73 m^2 is seen in 70 patients, >60 mL/min/1.73 m^2 is seen in 16 patients, >15 mL/min/1.73 m^2 is seen in 13 patients and 1 patient died.



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 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 is 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.

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