

Clinical Evaluation of Hospitalized Cases of Acute Febrile Illness with Thrombocytopenia in North - West Zone of Rajasthan

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Abstract

Background: Thrombocytopenia has been recognized as an important manifestation of acute febrile illness caused by various types of. Early diagnosis of aetiology is very important to reduce morbidity and mortality. This study was planned to evaluate clinical profile, aetiology, differential diagnosis, clinical course and outcome of such patients.

Methods: Present prospective cross-sectional study was conducted on 400 consecutive patients of fever with thrombocytopenia admitted during 1st May 2022 to 31st October 2022 in the Department of Medicine, S.P. Medical College & Associated Group of P.B.M. Hospitals, Bikaner. All patients were evaluated as per proforma including detail clinical history and physical examination. Laboratory evaluation including CBC, RFT, LFT, blood sugar, LDH, Rapid diagnostic test for malaria, PBF for MP, test for dengue, HBsAg, Anti HCV, HIV, PBF detail, Blood culture, D-dimer, test for Scrub typhus and leptospirosis, Ultrasonography and chest X-Ray was done in all cases. Other investigations were done as per requirement. All patients were treated as per guidelines and followed-up during hospitalization.

Results: Out of 400 patients 227 were males (age ranging 15-87 years, mean 35.46 ±15.63) and 173 females (age ranging 15-92 years, mean 39.75 ± 17.36). Dengue fever was found to be the commonest cause (29.5%) followed by Malaria, COVID-19 infection (0.75%) and one each HIV and Hepatitis B. In 54.25% of the cases definite etiological diagnosis could not be ascertained. 14.25% patients were having life threatening thrombocytopenia, 45% severe grade, 21.75% moderate and 19% mild thrombocytopenia. Severity of thrombocytopenia was associated with longer duration of illness ($p < 0.02$). Bleeding manifestations were observed in 5.75% but did not correlate with severity of thrombocytopenia. Mean duration of hospital stay was found to be

inversely proportion to total platelet count on admission.

Conclusion: Acute Febrile illness patients should be investigated for platelet count irrespective of the bleeding manifestations as decreased platelet count could be severe without external manifestations and could be an indicator of bad prognosis.

Keywords: Fever; Thrombocytopenia; Dengue Fever; Malaria.

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INTRODUCTION

Fever has been recognized as a cardinal manifestation of disease since ancient times, as recorded by ancient scholars like Hippocrates. Seen first as a disease but later recognized as an accompaniment to a variety of disease entities, fever is easily noted and is a reliable marker of illness. Fever is defined as an elevation of body temperature above normal circadian range as a result of change in the thermo regulatory centre located in the anterior hypothalamus. An AM temperature of $>37.20^{\circ}\text{C}$ and PM temperature of $>37.70^{\circ}\text{C}$ would define fever.

Thrombocytopenia is one of the most important haematological manifestations of many infections which may present with acute febrile illness. The normal range of platelet count is 1,50,000–4,00,000/ μL . Thrombocytopenia is defined as a platelet count below the lower normal limit of $<1,50,000/\mu\text{L}$. This may be due to decreased production, increased destruction (immunogenic and non-immunogenic causes) and increased sequestration by the spleen. Infections of varying types (viral, parasitic, bacterial) like dengue, malaria, leptospirosis, typhoid, HIV, military tuberculous and others have been associated with thrombocytopenia.^{2,3,4} The risk of complications like bleeding may be inversely proportional to the platelet counts.⁵

Acute febrile illness associated with thrombocytopenia accounts for the majority of out-patient visits and in-patient admissions in India. The causes for the same are variable and need a systematic approach to identify the aetiology and appropriate therapy. Fever and thrombocytopenia can cause significant morbidity in the form of bleeding manifestations, hemodynamic instability and this can also be potentially fatal if the aetiology is not recognized early.⁶ Therefore, this study was planned to evaluate clinical profile, aetiology, differential diagnosis, clinical course and outcome of such patients.

MATERIAL AND METHODS

This prospective cross-sectional study was conducted on 400 consecutive patients of fever with thrombocytopenia admitted during 1st May 2022 to 31st October 2022 in the Medicine department, Sardar Patel Medical College and associated group of Hospitals, Bikaner. Inclusion Criteria: 1. Age more than 15 years. 2. Patient presented with fever and thrombocytopenia. 3. Patient

giving consent. Exclusion Criteria: 1. Patient with thrombocytopenia without fever. 2. Patients with known case of thrombocytopenia like ITP, Chronic Liver Disease, Hematological disorders etc. 3. Drug induced thrombocytopenia. 4. Patient not giving consent.

All patients were evaluated as per proforma including detailed clinical history and physical examination. Laboratory evaluation including CBC, RFT, LFT, blood sugar, LDH, Rapid diagnostic test for malaria, PBF for MP, test for dengue, HBsAg, Anti HCV, HIV, PBF detail, Blood culture, D-dimer, test for Scrub typhus and leptospirosis, Ultrasonography and chest X-Ray was done in all cases. Other investigations were done as per requirement.

Complete Blood Count was carried out using Mindray 6-part Cell counter. Thrombocytopenia was defined as total platelet count $<1.5 \times 10^5/\text{cu mm}$ and severity was graded as per NCI - CTCAE grading: Mild ($<1,50,000 - 75,000/\text{mm}^3$), Moderate ($<75,000 - 50,000/\text{mm}^3$), Severe $<50,000 - 25,000/\text{mm}^3$ and Life threatening ($<25,000/\text{mm}^3$).

All the patients were treated as per guidelines. Platelet transfusion was done when indicated. All patients were followed-up till discharge.

RESULTS

Out of 400 patients 227 were males (age ranging 15-87 years, mean 35.46 ± 15.63) and 173 females (age ranging 15-92 years, mean 39.75 ± 17.36). Most of the cases were 21-40 years (48.8%), females were belonging to higher age group ($p < 0.009$). 210 cases were from rural area. 63 cases (15.75%) were having co-morbidities like hypertension (9.5%), T2DM (7%), T2DM with hypertension (2.75%) and COPD (2%).

On etiological differential diagnostic evaluation Dengue fever was found to be the commonest cause in our study accounting for 29.5% of the cases (No=118) followed by Malaria (15%; 60 cases, 59 vivax and one falciparum), 3 patients (0.75%) were diagnosed with COVID-19 infection and one each HIV and Hepatitis B. However, in 54.25% of the cases (No=217) definite etiological diagnosis could not be ascertained.

57 patients (14.25%) were having life threatening thrombocytopenia, 180 (45%) had severe grade, 87 (21.75%) moderate and 76 (19%) were having mild thrombocytopenia. Degree of thrombocytopenia at the time of admission was not statistically

significant different among various type of etiology (p= 0.812). (Table 1).

Most of the cases presented with fever of 5 days duration (26.75%) followed by 6 days (19.25%), 3

days (17.25%), 4 days (12%), 2 days (8.25%), 7 days (5.25%). 4% had duration of fever for one day and rest of the patients (5%) were having fever for 8-15 days. Severity of thrombocytopenia was associated

Table 1: Severity of TCP in Relation to etiology

Platelet Count (cells /cumm)	Dengue (n=118)	Malaria (n=60)	COVID (n=3)	Undiagnosed (n=219)	Total (n=400)
	No (%)	No (%)	No (%)	No (%)	No (%)
75000 -150000	18 (15.2)	11 (18.3)	1 (33.3)	46 (21)	76(19)
50000 -<75000	25 (21.1)	13 (21.7)	0 (0.00)	49 (22.4)	87(21.8)
25000 -<50000	63 (53.3)	25 (41.7)	1 (33.3)	91 (41.6)	180(45)
<25000	12 (10.1)	11 (18.3)	1 (33.3)	33 (15)	57(14.3)
Mean ±SD	49582.17± 29971.05	50819.38± 30118.86	42701.01± 28942.23	52527.14 ± 30076.42	52182.25± 30076.42
p value	0.812				

with longer duration of illness at the time of hospitalization (p< 0.02). (Fig. 1).

Other symptoms associated with acute febrile illness on admission are shown in (Table 2). Nausea

Mean duration of Illness and grade of Thrombocytopenia

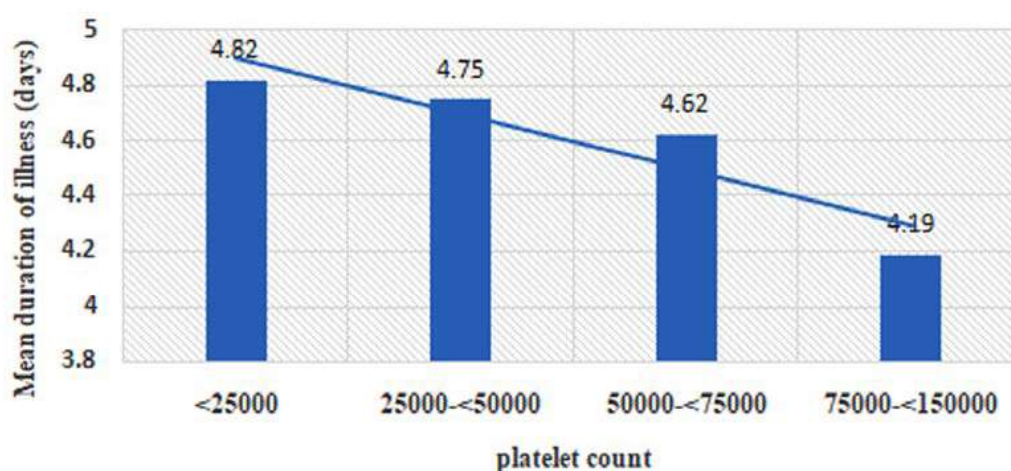


Fig. 1: Graph showing correlation between grade of thrombocytopenia and duration of illness.

and vomiting were the most common major symptom present in 217 (54.3%) patients followed by tiredness in 200 (50%), body ache (170, 42.5%), joint pain 166, 41.5%), bone pain (159, 39.8%), decrease appetite (156, 39%), headache (138, 34.5%) and retro-orbital pain (100, 25%). Other observed symptoms were pain abdomen (18.75%), cough (16.3%), palpitations (8%), breathlessness (3%), seizures (3, 0.75%) and psychiatric symptoms and syncope in 2 patients each (0.5%).

Bleeding manifestations were observed in 23 cases (5.75%) as shown in (Table 3). Although

we did not find any correlation of severity of thrombocytopenia with bleeding manifestation (p=0.160) (Table 4) but we observed statistically low mean platelet count in cases of epistaxis and petechiae while oral bleeding, hematuria and bleeding per rectum were associated with higher mean platelet count as compare to those who don't have it. (Table 5).

Other hematological manifestations are shown in (Table 6). Anemia was more commonly observed in malaria and leukopenia in dengue. Analysis of various biochemical parameters like liver function

Table 2: Symptoms in relation to etiology

Symptoms	Dengue (n=118)	Malaria (n=60)	COVID 19 (n=3)	Undiagnosed (n=219)	Total (n=400)
	No (%)	No (%)	No (%)	No (%)	No (%)
Fever	118 (100)	60 (100)	3 (100)	219 (100)	400 (100)
Headache	49 (41.5)	21 (35)	2 (66.7)	66 (30.1)	138(34.5)
Bodyache	51 (43.2)	30 (50)	2 (66.7)	87 (39.7)	170(42.5)
Bone pain	53 (44.9)	16 (26.7)	1 (33.3)	82 (37.4)	159(39.8)
Joint pain	55 (46.6)	13 (21.7)	2 (66.7)	96 (43.8)	166(41.5)
Retro orbital pain	40 (33.9)	9 (15.0)	1 (33.3)	50 (22.8)	100(25)
Nausea vomiting	69 (58.5)	36 (60.0)	1 (33.3)	111 (50.7)	217(54.3)
Decreased appetite	31 (26.3)	31 (51.7)	1 (33.3)	93 (42.5)	156(39)
Pain abdomen	24 (20.3)	11 (18.3)	2 (66.7)	38 (17.3)	75(18.8)
Tiredness	50 (42.4)	24 (40.0)	2 (66.7)	124 (56.6)	200(50)
Palpitation	13 (11.0)	1 (1.67)	1 (33.3)	17 (7.76)	32(8)
Breathlessness	6 (5.08)	2 (3.33)	2 (66.7)	2 (0.91)	12(3)
Cough	18 (15.3)	4 (6.67)	1 (33.3)	42 (19.2)	65(16.3)
Seizure	1 (0.85)	0 (0.00)	0 (0.00)	2 (0.91)	3(0.75)
Psychiatric symptoms	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.91)	2(0.5)
Bleeding manifestation	9 (7.62)	10 (16.7)	1 (33.3)	3 (1.36)	23(5.75)
Syncope	0 (0.00)	0 (0.00)	0 (0.00)	2 (0.91)	2(0.5)
Other	2 (1.69)	3 (5.00)	0 (0.00)	5 (2.28)	10(2.5)

Table 3: Bleeding manifestation in relation to etiology

Bleeding manifestations	Dengue (n=118)	Malaria (n=60)	COVID-19 (n=3)	Undiagnosed (n=219)	Total (n=400)
	No (%)	No (%)	No (%)	No (%)	No (%)
Epistaxis	1 (0.84)	3 (5.00)	0 (0.00)	7 (3.15)	11 (2.75)
Hematuria	2 (1.69)	1 (1.66)	1 (33.3)	0 (0.00)	4 (1)
Per rectum	1 (0.84)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.25)
Oral bleeding	0 (0.00)	1 (1.66)	0 (0.00)	0 (0.00)	1 (0.25)
Petechiae	7 (5.93)	7 (11.7)	0 (0.00)	2 (0.90)	10 (2.5)
Total	9 (7.62)	10 (16.7)	1 (33.3)	7 (3.19)	23 (5.75)

Table 4: Grade of TCP and bleeding manifestation

Grade of Thrombocytopenia (Platelet Count cells/cumm)	No of cases (%)	Present No (%)	
		Present No (%)	Absent No (%)
Mild (75000 - 150000)	76 (19)	3 (3.94)	73 (96.05)
Moderate (50000 - <75000)	87 (21.75)	3 (3.44)	84 (96.55)
Severe (25000 -< 50000)	180 (45)	10 (5.55)	170 (94.44)
Life threatening (<25000)	57 (14.25)	7 (12.2)	50 (87.71)
Total	400 (100)	23 (5.75)	377 (94.25)

P=0.160

Table-5: Mean platelet count in relation to bleeding manifestation

Bleeding manifestation	No of cases (%)	Present No (%)	Absent No (%)	p
Epistaxis	11 (2.75)	31818.18±29997.55	52626.09±30036.02	0.0240*
Haematuria	4 (1)	87333.33±28147.78	51830±30036.02	0.0420*
Per rectum	1 (0.25)	63000±0	52198.19±30033.65	0.0001*
Oral bleeding	1 (0.25)	36000±0	52097.98±30036.02	0.4495
Petechiae	10 (2.5)	35400±27864.12	52481.79±30036.02	0.0356*

test, renal function test, LDH, electrolytes are shown in (Table 7) and 8. SGOT and SGPT were elevated in most of the cases (82.8%, 79.5% respectively), hyperbilirubinemia and renal dysfunction was more commonly observed in malaria.

All patients were treated as per guidelines (Table 9). Around 50% cases of uncertain etiology were treated on malaria protocol on clinical ground. Platelet transfusion was done in 49 cases as per clinical indication and bleeding manifestation

Table 6: Haematological parameters in relation to etiology

Lab parameters	Dengue (n=118)	Malaria (n=60)	COVID (n=3)	Undiagnosed (n=219)	Total (n=400)
Hb(g/dl)					
Male (<13.5)	48 (40.7)	31 (51.66)	2 (66.7)	84 (38.4)	165 (41.3)
Female (<12)	30 (25.4)	14 (23.3)	1 (33.3)	54 (24.7)	99 (24.8)
Total	78 (66.1)	45 (75)	3 (100)	138 (63.0)	264 (66)
Mean±SD	M 10.67±5.92	10.64±5.96	10.50±6.01	11.6±0.00	10.78±5.92
	F 9.81±6.08	9.92±6.08	9.3±6.14	10.0±0.00	9.88±6.11
TLC (cells/cumm)					
<4000	65 (55.1)	31 (51.6)	2(66.6)	112 (51.1)	210 (52.5)
4000 - 11000	47 (39.8)	27 (45.0)	1(33.3)	91 (41.6)	166 (41.5)
>11000	6 (5.08)	2 (3.33)	0 (0.00)	16 (7.21)	24 (6)

Table 7: Biochemical Function tests in relation to etiology

Lab parameters	Dengue (n=118) (%)	Malaria (n=60)	COVID (n=3)	Undiagnosed (n=219)	Total (n=400)
SGOT (IU/L)	≤40 22 (18.6)	9 (15.0)	1 (33.3)	37 (16.8)	69 (17.3)
	>40 96 (81.4)	51 (85.0)	2 (66.6)	182 (83.1)	331 (82.8)
SGPT(IU/L)	≤35 26 (22.0)	14 (23.3)	-	42 (19)	82 (20.5)
	>35 92 (78.0)	46 (76.7)	3 (100)	177 (81)	318 (79.5)
LDH (IU/L)	≤420 67 (56.8)	37 (61.7)	-	132 (60.3)	236 (59)
	>420 51 (43.2)	23 (38.3)	3 (100)	87 (39.7)	164 (41)
ALP (IU/L)	≤306 99 (83.9)	53 (88.3)	-	200 (90.1)	352 (88)
	>306 19 (16.1)	7 (11.7)	3 (100)	19 (8.67)	48 (12)
S. Bilirubin (mg/ dl)	≤1.2 82 (69.49)	32 (53.33)	1 (33.3)	171 (78.0)	286 (71.5)
	>1.2 36 (30.51)	28 (46.67)	2 (66.6)	48 (21.9)	114 (28.5)
S. Albumin (g/ dl)	<3.5 36 (30.51)	26 (43.33)	1 (33.3)	77 (35.2)	140 (35)
	3.5-5.0 76 (64.41)	33 (55.00)	2 (66.6)	127 (57.9)	237 (59.25)
	>5.0 6 (5.08)	1 (1.67)	-	17 (7.66)	23 (5.75)
B. Urea (mg/ dL)	≤45 108 (91.53)	32 (53.33)	2 (66.6)	172 (78.5)	316 (79)
	>45 10 (8.47)	28 (46.67)	1(33.3)	45 (20.6)	84 (21)

table cont.....

S. Creatinine (mg/dL)	≤1.5	106 (89.83)	45 (75.00)	2 (66.6)	200 (91.3)	353 (88.25)
	>1.5	12 (10.17)	15 (25.00)	1 (33.3)	19 (8.67)	47 (11.75)
Na+(mmol/L)	<135	28 (23.7)	14 (23.3)	1 (33.3)	65 (29.6)	108 (27)
	135-145	82 (69.5)	41 (68.3)	1 (33.3)	139 (63.5)	263 (65.75)
	>145	8 (6.78)	5 (8.33)	1 (33.3)	15 (6.84)	29 (7.25)
K+(mmol/L)	<3.5	16 (13.6)	6 (10.0)	-	30 (13.5)	52 (13)
	3.5 - 5.5	100 (84.7)	19 (31.7)	3 (100)	182 (83.1)	304 (76)
	>5.5	2 (1.69)	35 (58.3)	-	13 (5.86)	50 (12.5)

Table 8: Mean value of various lab parameters in relation to etiology

Lab parameters	Dengue	Malaria	COVID-19	Undiagnosed	Total	p Value
Hb (male)	11.91±5.94	11.91±6.01	11.66±2.64	11.92±5.92	11.78±5.92	1
Hb (female)	11.92±6.08	11.93±6.14	10	11.91±6.01	11.98±5.98	0.96
TLC	5095.41± 3477.2	5117.06± 3440.63	5039.11± 3410.92	5084.13± 3439.42	5084.13± 3439.42	1
MPV	9.58±2.21	9.63±2.21	9.69±2.26	9.56±2.20	9.56±2.20	0.997
PCT	0.06±0.064	0.06±0.064	0.06±0.06	0.06±0.06	0.06±0.064	1
MCV	89.80±10.62	90.10±10.47	90.86±10.16	89.67±10.55	89.67±10.55	0.991
SGOT	127.72±305.96	135.54±322.20	131.17±323.25	133.66±12.49	133.66±316.71	0.994
SGPT	79.55±137.27	82.61±143.60	80.33±142.44	82.01±141.32	82.01±141.32	0.999
S. Bilirubin	1.76±7.41	1.78±7.44	1.52±5.69	1.74±7.30	1.74±7.30	1
LDH	403±205	405±205	399±211	399±205	399.5±205	0
S. Albumin	3.66±0.70	3.66±0.71	3.64±0.68	3.06±0.69	3.65±0.69	0.001
ALP	137.16±79.41	136.83±78.15	135.58±76.24	137±78.42	137±78.42	1
B. Urea	35.5±20.22	35.07±20.24	35.04±21.30	35.19±19.96	35.19±19.96	1
S. Creatinine	1.26±2.99	1.27±3.06	1.20±2.89	1.25±2.94	1.25±2.94	1
Na+	136.2±12.62	136.76±12.71	136.86±11.61	136.64±12.49	136.64±12.49	0.989
K+	4.76±5.83	4.77±6.14	4.85±6.25	4.83±6.03	4.83±6.03	1

Table 9: Treatment given during the course of hospital stay

Treatment given	Dengue (n=118)(%)	Malaria (n=60) (%)	COVID-19 (n=3) (%)	Undiagnosed (n=219)(%)	Total (n=400) (%)
PRBC Transfusion	4 (3.38)	1 (1.66)	0	4(1.80)	9 (2.25)
RDP Transfusion	16 (13.6)	11 (18.33)	1(33.3)	21 (9.6)	49 (12.25)
<i>Antibiotics</i>					
Ceftriaxone	118 (100)	60 (100)	3(100)	172 (78.5)	353 -88.25
Clindamycin	17 (14.41)	60 (100)	-	111 (50.68)	188 (47)
Azithromycin	57 (48.3)	60 (100)	-	71 (31.98)	188 (47)
<i>Antimalarials</i>					
Artesunate	17 (14.41)	60 (100)	-	111 (50.68)	188 (47)
Primaquine	0 (0.00)	60 (100)	-	0 (0.00)	60 (15)
<i>Supportive treatment</i>					
Antipyretics	118 (100)	60 (100)	3 (100)	219 (100.00)	400 (100)
IV fluids	118 (100)	60 (100)	3 (100)	219 (100.00)	40 (100)

Table 10: RDP transfusion in relation to severity of TCP and bleeding manifestation

Platelet count (cells/cumm)	Bleeding manifestation (%)	RDP transfusion (%)	No of RDP per case			
			1	2	3	4
75000 - 1,50,000 (n=76)	3(3.94)	3(3.94)	1(1.31)	-	1(1.31)	1(1.31)
50,000 - <75,000 (n=87)	3(3.44)	3(3.4)	1(1.14)	1(1.14)	-	-
25000 - <50,000 (n=180)	10(5.55)	25(13.9)	3(1.66)	4(2.22)	1(0.55)	17(9.44)
<25000 (n=57)	7 (12.2)	18(31.5)	2(3.50)	2(3.50)	2(3.50)	12(21.05)
Total (n=400)	23 (5.75)	49 (12.3)	7 (1.75)	7 (1.75)	4 (1)	30 (7.5)

Table 11: Duration of hospital stay in relation to severity of TCP

Duration of hospital stay (days)	Platelet counts (cell/cumm)			
	75,000 - 150000 (n=76)	50,000<75000 (n=87)	25,000<50000 (n=180)	<25,000 (n=57)
	No.(%)	No.(%)	No.(%)	No.(%)
<3	36 (47.3)	16 (18.3)	6 (3.33)	0
3 - 5	40 (52.6)	61 (70.11)	122 (67.7)	39 (68.4)
>5	0	10 (11.4)	52 (28.8)	18 (31.5)
Mean + SD	2.64±1	3.24±1	3.9±1	4.71±1
P value	0.00001*			

(Table 10). Mean duration of hospital stay was found to be inversely proportion to total platelet count on admission. (Table 11, Fig. 2). In our study only one patient died (0.25%) who was suffering from Covid-19.

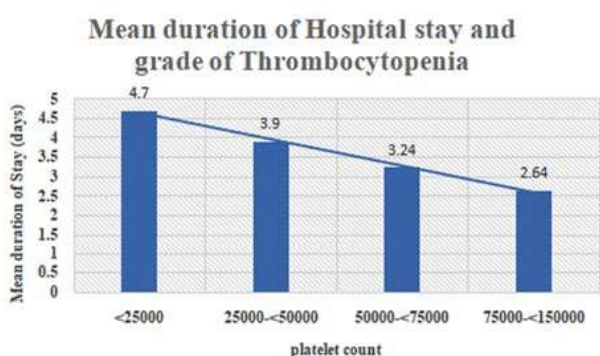


Fig. 2: Graph showing correlation between grade of thrombocytopenia and duration of Hospital stay

DISCUSSION

This prospective cross-sectional study was designed on patients of acute febrile illness with thrombocytopenia admitted in various medical wards including medical ICU in the department

of medicine at our tertiary care centre, Sardar Patel Medical College and associated group of Hospitals, Bikaner, North-West zone of Rajasthan to evaluate clinical profile, etiological differential diagnosis course during hospitalization and outcome.

In our study, the mean age of male patients was 35.46 ±15.63, mean of females was 39.75 ± 17.36. The number of cases belonged to the age group of 21-30 years (27%) and followed by 31-40 years (22%). Similar observations were made by Lakshmi, *et al.* (2020)⁸ who observed maximum prevalence of fever with thrombocytopenia in the age group of 21-30 years (32%) and Mural *et al.* (2017)⁹ who included patient in the age group 18-80 years and found maximum number of cases belonging to the age group 18-30 years (36%) followed by 31-40 years (22%). Least prevalence was observed in age group >60 years (10%) similar to Raiker *et al.* (2013).¹⁰ Our study shows male preponderance (M:F 1.31:1) similar to Lakshmi, *et al.* (1.44:1).⁸ In a similar study Dash *et al.* (2013)¹¹ found male to femaleratio1.5:1 but in Raiker *et al.*¹⁰ study this ratio was 2.7:1.

In present study nausea and vomiting were the most common symptom followed by tiredness, body ache, joint pain, bone pain, decrease appetite, headache and retro orbital pain while Lakshmi, *et al.*⁸ Found headache was the most common symptom

(32%) followed by myalgias (31%), vomiting (27%), pain abdomen (6%), bleeding manifestations (3%), and altered sensorium (1%). We observed bleeding manifestations in 5.75% cases while Lakshmi, *et al* found it in 3%. In our study, the major bleeding manifestation in Dengue and Malaria was petechiae which was present in 7(5.93%) and 7(11.7%) patients respectively consistent with the findings in the studies conducted by Patne SV *et al.* (2017)¹², M P Gondhali *et al.* (2016)², Lakshmi *et al.* (2020)⁸. In study done by Patil *et al.* (2014)¹³ petechiae was the major manifestation 73.9% followed by spontaneous bleeding (26.9%) in patients of fever with thrombocytopenia. Similar to our observation Raikar *et al.*¹⁰ also found no correlation between the platelet count and bleeding manifestations.

We found life threatening to severe thrombocytopenia (<50,000/cumm) in 59.25% of the cases while Lakshmi, *et al.* observed platelet count of ≤ 40000 /cumm in 20% of patients and 18% of their patients had platelet count of 40000-60000/cumm, in the study done by Dash *et al.*¹¹ majority of their patients (26%) had platelet count in the range of 61000 - 80000/cu.mm, followed by 25% (21000 - 40000/cu.mm).

In majority of our cases (54.25%) diagnostic etiology could not be confirmed while in rest of the cases Dengue (29.5%) was the commonest cause of fever with thrombocytopenia followed by malaria (15%), 3 patients (0.75%) were diagnosed with COVID-19 infection. Lohitashwa *et al.* (2009)¹⁴ found malaria (41%) was the most common cause of fever with thrombocytopenia followed by enteric fever (24%), septicemia (19%), dengue (14%).

In our study 66% of the total patients were anemic. 75% of patients with malaria had presented with anemia compared to 66.1% with Dengue Fever. All the 3 COVID-19 infected patients were anemic and 1 death was reported among them. Oh *et al.* (2021)¹⁵, Jha *et al.* (2022)¹⁶ observed anemia on admission has been indicated as prognostic factor for severe outcomes in hospitalized patients with COVID-19. The mean LDH was highest among patients with Malaria (405 \pm 205 IU/L) followed by patients of Dengue (403 \pm 205 IU/L), COVID-19 (399 \pm 211 IU/L) and in undiagnosed cases (399 \pm 205 IU/L). The p value was <0.0001 which agrees with Zhong-Tao Gai *et al.* (2012)¹⁷ study on severe fever with thrombocytopenia syndrome.

The mortality was only 0.25% among the total cases. Old age, presence of prior respiratory illness, concurrent infection with COVID-19 virus and Dengue virus resulting in AKI, anemia, thrombocytopenia and bleeding manifestation

could be the bad prognostic factors resulted in death of this patient in spite of intensive management with ventilatory support, high antibiotic coverage, RDP transfusions and other supportive management.

CONCLUSION

Fever with thrombocytopenia is one of the important manifestations of infections like dengue, malaria etc. which are highly prevalent in our area. Acute Febrile illness patients should be investigated for platelet count irrespective of the bleeding manifestations as decreased platelet count could be severe without external manifestations and could be an indicator of bad prognosis if not treated early with platelet transfusion. Understanding of natural history of illness is essential for early diagnosis and better management of the cases thus preventing morbidity and mortality.

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