

THROMBOCYTOPENIA AT A TERTIARY CARE CENTRE

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ABSTRACT

BACKGROUND AND OBJECTIVES

The aetiologies of thrombocytopenia are diverse. Various studies on thrombocytopenia done in the past have related to specific aetiologies. This study attempts to determine the common aetiologies of thrombocytopenia and bleeding manifestations in adult patients admitted under Department of Medicine.

METHODS

Patients older than 18 years of age who were first time found to have thrombocytopenia at admission under Department of Medicine between 1st October 2014 and 31st September 2015 were followed up during their stay in hospital and the diagnosis made, bleeding manifestations, and requirement of platelet transfusions were recorded.

RESULTS

200 patients were included in the study. Dengue/dengue-like fever was the diagnosis made in 30% of patients followed by malaria (22%), undiagnosed aetiology (9%), HELLP (6%), snake bite and sepsis 5% each, ITP and megaloblastic anaemia 4.5% each, haematological malignancies and CTD 3% each, and other rare causes formed the rest.

Bleeding secondary to thrombocytopenia was seen in 36 patients. 22.2% of them were diagnosed as dengue, 19.4% had malaria, 16.7% had ITP, 11.1% of patients with HELLP, 8.3% each had malignancy and undiagnosed viral infections, 5.6% each had CTD and MDS, and 2.8% had aplastic anaemia.

Dengue fever was responsible for thrombocytopenia-related bleeding in 8 cases, ITP in 6 cases, malaria in 7 cases, HELLP in 4 cases, malignancy and undiagnosed aetiology 3 cases each, CTD and MDS 2 cases each, and aplastic anaemia in 1 case.

The common bleeding manifestations were GIT (Melena), petechial rash, and menorrhagia occurring in 33.3%, 22.2% and 13.8% of total number of patients respectively.

30.5% of those who had bleeding secondary to thrombocytopenia had platelet count <5000/ μ L. 68.7% of those with platelet count <5000/ μ L had bleeding manifestation.

36.6% of those who had bleeding secondary to thrombocytopenia had platelet count 5,000-10,000/ μ L. 65.0% of those with platelet count 5,000-10,000/ μ L had bleeding manifestation.

46 patients were given platelet transfusions, 65.2% of these cases were transfused because of bleeding and 34.78% were prophylactic.

INTERPRETATION AND CONCLUSION

Dengue fever was the commonest cause of newly found thrombocytopenia in adult patients admitted under Department of Medicine. The commonest bleeding manifestation secondary to thrombocytopenia was GIT bleed. Though, Dengue and Malaria were the most common aetiology diagnosed in patients with bleeding secondary to thrombocytopenia, the proportion of aplastic anaemia, MDS, and ITP patients who had bleeding manifestation was higher than the proportion of Dengue and Malaria patients who developed bleeding. Major proportion of bleeding manifestation occurred in patients with platelet count <5000/ μ L. There was no definitive trigger value of platelet for platelet transfusion and transfusion because of bleeding was greater than prophylactic transfusion.

KEYWORDS

Thrombocytopenia.

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INTRODUCTION: Nature has designed a complex, but ingenious system to maintain blood in the vascular system fluid and free from clots, yet allow the rapid formation of solid plug to close ruptures as other forms of injury to blood vessels. This process is referred to as normal haemostasis.¹

Thrombosis denotes the formation of a clotted mass of blood within the noninterrupted vascular system. It represents to a considerable extent, a pathologic extension of normal haemostasis. Platelets play a central role in normal haemostasis and therefore also in thrombosis. Despite their lack of nucleus, head, and heart, these tiny structures (about 2 micrometer in diameter) are amazingly versatile. In the haemostatic cascade, platelets undergo 3 important reactions: (1) adhesion and shape change, (2) secretion (relapse reaction), and (3) aggregation, collectively referred to as platelet activation.¹

Thrombocytopenia is characterised by bleeding most often from small vessels. This bleeding can manifest as petechiae over the skin, haemorrhages from mucosa of gastrointestinal or genitourinary tract. Intracranial haemorrhage is a dangerous consequence in thrombocytopenic patients.

In 1910, W.W. Duke demonstrated the relation of blood platelets to haemorrhagic disease and for the first time demonstrated that haemorrhagic disease caused by thrombocytopenia could be relieved by platelet transfusion.² Platelet transfusions are given prophylactically or therapeutically to thrombocytopenia patients and to patients undergoing invasive procedures.

Platelets are very important in haemostatic mechanism. The causes of thrombocytopenia are varied and they can be associated with bleeding, which at times can be life threatening (e.g. intracranial bleed). Timely recognition and treatment of underlying condition, platelet transfusions are required to prevent fatal outcomes.

OBJECTIVES: This study aims to determine the following;

1. The relative frequency of different disease conditions presenting as newly-found thrombocytopenia in adult patients getting admitted under Department of Medicine at an Indian tertiary care hospital.
2. The proportion of patients who had bleeding manifestations.
3. The different bleeding manifestations in order of their commonness of occurring.
4. The percentage of patients requiring interventions like platelet substitutes, steroids, splenectomy.
5. To determine whether low platelet count or presence of bleeding manifestation was considered more often as indicator for platelet transfusions.

METHODS:

Source of Data: Adult patients admitted under Department of Medicine who were detected to have thrombocytopenia at admission. The trend of the platelet count post admission, bleeding manifestations and requirement of platelet transfusions in these were noted during their hospital stay.

Method of Collection of Data:

Inclusion Criteria: Patients presenting with thrombocytopenia to Department of Medicine during the period between 1st October 2014 and 31st September 2015 (12 months) satisfying the following inclusion criteria were included in the study.

- a) Age >18 years.
- b) Platelet count <1,00,000/ μ L (at admission).

Exclusion Criteria:

- a) Age <18 years.
- b) Patients who were earlier diagnosed to have conditions that are known to cause thrombocytopenia (e.g. known cases of haematological malignancies, aplastic anaemia, MDS, ITP).
- c) Patients who have received chemotherapy for neoplasms in previous admissions subsequently presenting as thrombocytopenia.
- d) Patients who have already received platelet transfusion prior to admission.

All patients included in the study were followed up during their course in the hospital. The trend of their platelet counts was recorded. The decision as to when the platelet counts were repeated was that of the treating physician.

The bleeding manifestations patients presented with or developed during their course in hospital were recorded.

The diagnosis made in each of these cases was noted down.

The proportion of study patients requiring interventions to improve platelet count like platelet transfusion, steroids and biologicals, and the reason for such intervention was recorded.

Proportion of patients receiving platelet transfusions because of presence of a bleeding manifestation and proportion requiring prophylactic platelet transfusion were determined.

RESULTS:

Aetiology: During the study period of 12 months (October 2014 to September 2015), 200 patients satisfied the inclusion criteria and were included in the study. There were 124 males (mean age: 32.4 yrs.) and 76 females (mean age: 25.5 yrs.) in the study population. The commonest aetiology responsible for newly-diagnosed thrombocytopenia in adult patients admitted under Department of Medicine was found to be dengue. 60 patients were diagnosed to have dengue making up 30 percent of the total number of cases.

Malaria was a close second diagnosis with 44 cases (22%). Of the patients with malaria, *Plasmodium falciparum* was the cause for thrombocytopenia in 29 patients (66% of the total number of malaria cases) followed by *Plasmodium vivax* with 11 patients and 4 patients were found to have mixed infection.

Undiagnosed aetiology was next most common cause of thrombocytopenia where the patient presented with thrombocytopenia and dengue, malaria, salmonella, HIV, HBsAg serology was negative constituting 18 cases [9% of the total cases].

HELLP syndrome was fourth most common cause of thrombocytopenia making 12 cases [6%].

Snake bite and sepsis was next most common cause of thrombocytopenia each making 10 cases each [5%].

ITP was next most common cause making up 9 cases of total [4.5%].

Megaloblastic anaemia was next most common cause of thrombocytopenia making 8 cases of total [4%].

Haematological malignancies and connective tissue disorders constitute 6 cases each contributing 3% of cases each. Among malignancies, 2 cases are multiple myeloma, 2 cases are AML, 1 case each of non-Hodgkin's lymphoma and CLL. Among connective tissue disorders, 4 cases are SLE and 2 cases are mixed connective tissue disorder.

HIV constitutes 5 cases [2.5%], Salmonella constitutes 4 cases [2%], and hepatitis constitutes 2 cases [1%].

Myelodysplastic syndrome 2 cases [1%], aplastic anaemia 1 case [0.5%].

Portal hypertension with hypersplenism 2 cases [1%].

DISCUSSION: A total number of 200 patients were included in the study during the study period of 12 months from October 2014 to September 2015. Viral fever was the most common aetiology found in adult patients who were found to have thrombocytopenia for the first time and were admitted under Department of Medicine. 30% of the patients were diagnosed to have dengue.

Fever-associated thrombocytopenia accounted for 143 cases. There were 67.8% males and 32.2% females in this

group. This ratio was similar to a study done by Nair PS et al³ at a New Delhi tertiary care hospital between March 2002 to June 2003 where 109 patients with fever-associated thrombocytopenia were studied. There were 69.7% males and 30.3% females in that study.

Platelet count range (cells/ μ L)	Nair PS, St. Stephen's Hospital, New Delhi, 2003	Present study
50,000-1,00,000	62(56.8%)	71(49.6%)
20,000-50,000	28(25.7%)	34(23.8%)
10,000-20,000	6(9.2%)	11(7.7%)
5,000-10,000	6(5.5%)	14(9.8%)
<5,000	3(2.7%)	13(9.1%)

Table 1: Number of Patients with Fever-Associated Thrombocytopenia in Different Platelet Ranges

There were more patients in the below <5000/ μ L platelet count group in the present study compared to the study done in New Delhi (9.1% vs. 2.7%). The percentages of patients below 20,000/ μ L platelet count were 38% in the present study and 17.4% in the study mentioned above.

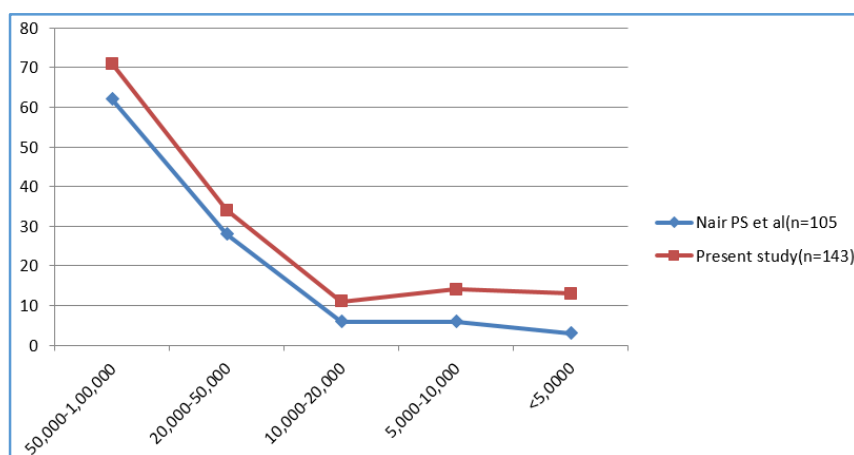


Chart 1: Comparison of Platelet Counts in the Present Study with That of the Study Done by Nair PS et al, New Delhi, 2003

Sepsis was the commonest cause of fever-associated thrombocytopenia in the St. Stephen's study followed by enteric fever and dengue fever. In contrast to this data from Northern India, dengue was the leading cause of fever-associated thrombocytopenia followed by malaria and sepsis. Only five (2.5%) confirmed cases of enteric fever had platelet count <1,00,000/ μ L in the present study whereas 14% of cases had enteric fever in the St. Stephen's study. Enteric fever presenting with thrombocytopenia hence appears to be less common in Southern India where the present study was conducted, compared to that in the North.

Aetiology of thrombocytopenia	Nair PS et al, New Delhi, 2003	Present study
Sepsis	29(26.65%)	10(7%)
Salmonella	16(14.7%)	5(3.4%)
Dengue	15(13.8%)	60(42%)
Malaria	10(9.2%)	44(31%)
Others	39(35.8%)	24(16.6%)
Total	109	143

Table 2: Aetiologies of Fever-Associated Thrombocytopenia

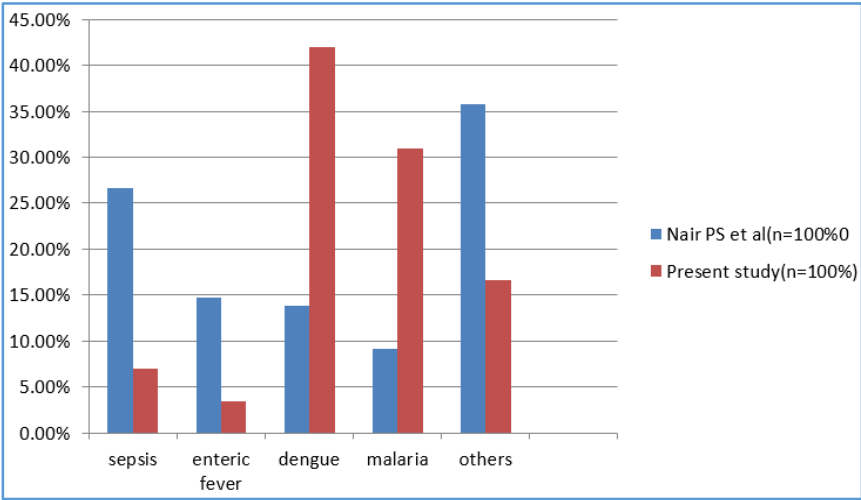


Chart 2: Comparison of Aetiologies of Fever-Associated Thrombocytopenia

Between present study and study done by Nair PS et al New Delhi, 2003, the commonest bleeding manifestation secondary to thrombocytopenia was GIT bleed, which was seen in 33.3% of cases followed by petechial rash in 22.2%. 13.8% of women had menorrhagia.

The frequency of bleeding manifestation in fever-associated thrombocytopenia was less in the present study compared to the study done in St. Stephen's, New Delhi.

12.6% of those with fever-associated thrombocytopenia had bleeding manifestation in the present study whereas 41.3% had bleeding manifestation in the St. Stephen's study. Petechial rash and GI bleed were the most common bleeding manifestation in the St. Stephen's study (9.2% each). Petechial rash was not high in the list in the present study among patients with fever-associated thrombocytopenia (2.8%).

Bleeding manifestation	No. of patients		Percentage of patients	
	Nair's PS et al	Present study	Nair's PS et al	Present study
Petechial rash	10	4	9.2%	2.8%
GI bleed	10	6	9.2%	4.2%
Epistaxis	7	2	6.4%	1.4%
Gum bleed	6	1	5.5%	0.7%
Haematuria	5	2	4.6%	1.4%
Haemoptysis	3	0	2.8%	0%
Others including menorrhagia	4	3	3.7%	2.15
	45/109	18/143	41.3%	12.6%

Table 3: Comparison of Bleeding Manifestations Between Present Study and Study Done by Nair's P S et al New Delhi 2003

However, GI bleed (4.2%) was most frequent bleeding manifestation in this study also.

Bleeding manifestations in patients studied for suspected dengue fever in a study one at Hawaii in 2001-2002 (1644 cases) found petechiae to be the commonest bleeding manifestation followed by menorrhagia and epistaxis. Though, viral exanthema was reported. There was no report of petechiae in patients with dengue fever in the present study. Petechiae were seen commonly in cases of ITP. Bleeding manifestation because of thrombocytopenia secondary to viral fever were seen only in 7 of the 60 cases of viral fever included in the study with two each having menorrhagia and melena, one patient had a petechial rash, one had epistaxis, and one had haematuria. There were no cases with haematemesis or gum bleed in patients with dengue fever. The fact that the sample size of cases of viral

fever was small compared to the Hawaii study is a limitation in the comparison.

Bleeding manifestation	Paul V Effler et al, Hawaii ⁴ 2001-2002 (% Of patients)	Present study (% of patients)
Petechiae	8%	1.7%
Menorrhagia	5.5%	3.3%
Epistaxis	4.4%	1.7%
Gum bleed	4.5%	0%
Melena	3.1%	3.3%
Haematuria	3.1%	1.7%
Haematemesis	1.3%	0%

Table 4

Plasmodium falciparum and *Plasmodium vivax* are endemic infections in India and are associated with mild haematological abnormalities. Severe thrombocytopenia is common in isolated *falciparum* and mixed *falciparum/vivax* malaria, but is very rare in isolated *P. vivax* infection. In the present study, 27.3% of cases of *Plasmodium vivax* malaria had platelet count $<40,000/\mu\text{L}$ whereas a study done by Myong-don, et al⁴ in South Korea in 1996-1999 on 101 patients of *Plasmodium vivax* had only 5% fall into this group. Lower platelet counts secondary to isolated *Plasmodium vivax* malaria appears to be commoner in the Indian study. It is however to be noted that none had platelet count less than $20,000/\mu\text{L}$. In Horstmann's series,⁽⁵⁾ the lowest count in 39 cases of *vivax* malaria was $44 \times 10^9/\text{L}$. Profound thrombocytopenia secondary to isolated *vivax* malaria have been reported from India, one with an initial platelet count $5 \times 10^9/\text{L}$ ⁽⁶⁾ and another $8 \times 10^9/\text{L}$ ⁽⁷⁾, these being first and second cases of profound thrombocytopenia secondary to *vivax* infection being reported in literature. 54.5% of cases of *vivax* malaria fell into the 40×10^9 to 80×10^9 category whereas 45.4% into this category in the South Korean study. Thrombocytopenia secondary to isolated *vivax* infection probably tends to be more severe in India.

Platelet count ($/\mu\text{L}$)	Myoung-don OH et al, Seoul, South korea 1996-99	Present study
$<40,000$	5(5%)	3(27.3%)
40,000-80,000	46(45.4%)	6(54.5%)
$>80,000$	29(49.6%)	218.2%)
Total	101	11

Table 5: Comparison of Platelet Count Range in Plasmodium Vivax Malaria

Definitive studies (e.g. well-designed, prospective, randomised clinical trials) are not available either historically or at present to support evidence-based decisions regarding a trigger level of platelet count that indicates prophylactic platelet transfusion.⁽⁸⁾ Instead, retrospective reviews and anecdotal reports provide observational data to assist in best guess clinical practices. Reasonable clinical practice until more definitive data become available is to transfuse enough platelets per each transfusion to maintain the blood platelet count $>10 \times 10^9/\text{L}$ in stable non-bleeding patients, $>20 \times 10^9/\text{L}$ in unstable non-bleeding patients, and $>50 \times 10^9/\text{L}$ in bleeding patients or in those undergoing invasive procedures.⁽⁹⁾

In the present study, 16 out of 46 patients who received platelet transfusion were transfused prophylactically. No definitive trigger value of platelet count for prophylactic transfusion was observed. However, 81.3% of those who received prophylactic platelet transfusions had a platelet count less than $20,000/\mu\text{L}$. 18.7% of the prophylactic platelet transfusions were however given to patients with platelet count $>20,000/\mu\text{L}$. No uniform guidelines for prophylactic transfusion therapy were hence found to be followed.

This study had several limitations. As the study was conducted only in patients admitted under Department of Medicine, it did not include surgical cases. Obstetric and gynaecological causes of thrombocytopenia, which were referred to our hospital were studied and patients with portal hypertension, hypersplenism who were admitted directly under Department of Gastroenterology were not included in the study. Drug-induced thrombocytopenia was also not evaluated. Most of the haematological malignancies were admitted directly in the cancer hospital and hence not evaluated thoroughly.⁽¹⁰⁾

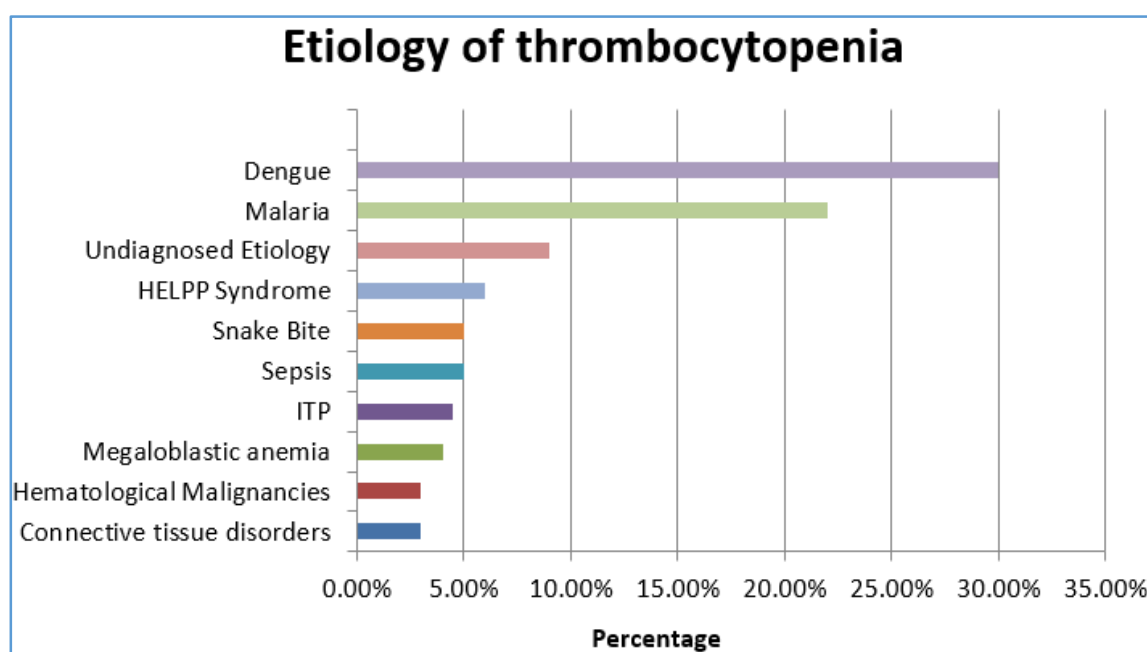


Chart 3: Aetiology of Thrombocytopenia

Disease	Number of Cases	Percentage of cases
HIV	5	2.5
Salmonella	4	2
MDS	2	1
Aplastic anaemia	1	0.5
Portal hypertension with hypersplenism	2	1

Table 6: Miscellaneous Causes of Thrombocytopenia

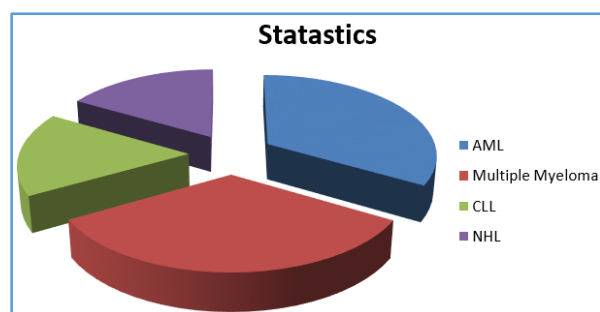


Chart 4: Haematological and Lymphoid Malignancies Responsible for Thrombocytopenia

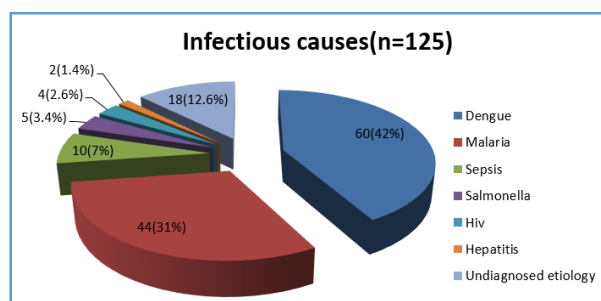


Chart 5: Infectious Causes of Thrombocytopenia

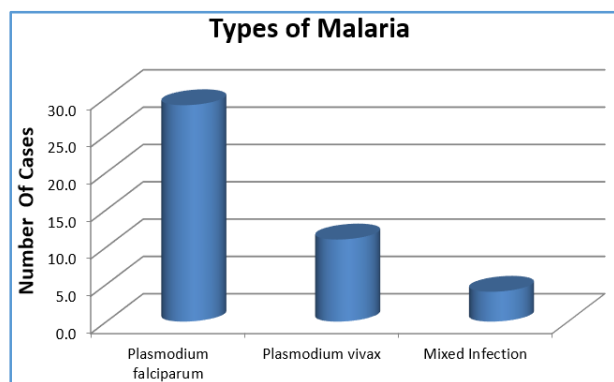


Chart 6: Type of Malaria in Patients With Thrombocytopenia

Bleeding Manifestations: Of the total 200 patients with platelet count $<1,00,000/\mu\text{L}$, bleeding manifestations were seen in a total of 48 patients (24%).

2 patients with portal hypertension had variceal bleed. 2 cases of HELLP syndrome, 4 cases of snake bite, 4 cases of sepsis also had PT and APTT raised and were in DIC. Bleeding in these 12 cases [6%] was not attributed to thrombocytopenia.

In remaining 36 patients [18%], bleeding was attributed to thrombocytopenia. The diagnosis in these

patients was ITP [6 patients 16.7%], dengue fever [7 cases 19.4%], malignancies 3 cases [8.3%], malaria 7 cases each [19.4%], HELLP syndrome 4 cases [11.1%], undiagnosed aetiology 2 cases [5.8%], sepsis 3 cases [8.3%], enteric fever 1 case [2.8%], HIV 1 case [2.8%], MDS and CTD 2 cases each [5.6%], and aplastic anaemia 1 case [2.8%].

Though the maximum number of cases with bleeding was higher in dengue fever than other causes, the total number of patients also were higher in the dengue fever group, the frequency of bleeding manifestation was higher in aplastic anaemia [100% had bleeding], MDS [100% had bleeding], and ITP [66.7% had bleeding] compared to 11.7% in dengue [7 out of 60 cases of dengue had bleeding].

Thrombocytopenia secondary to malignancy was responsible for bleeding in 3 cases [3 out of 6 cases] constituting 50% of cases making this also most common cause of frequency of bleeding in thrombocytopenia patients.

4 cases of malaria, 4 cases of HELLP, 2 cases of undiagnosed aetiology, 2 cases of MDS, 1 case of aplastic anaemia, 2 cases of connective tissue disorders had bleeding manifestations.

Bleeding manifestations secondary to thrombocytopenia were seen most commonly with platelet count $<5000/\mu\text{L}$. 11 out of 16 cases, i.e. 68.7% of patients with platelet count of $<5000/\mu\text{L}$ had bleeding. 65% of patients with platelet count of $5000-10,000/\mu\text{L}$ (13 out of 20 patients) and 22.7% of patients with platelet count between $10,000-20,000/\mu\text{L}$ (5 out of 22 cases) had bleeding. There were 40 patients between $20,000$ to $50,000/\mu\text{L}$ group. 4 cases (10%) of them had bleeding. The occurrence of bleeding was least in $50,000-1,00,000$ group with 3 cases of bleeding out of 102 patients in this group (2.94%).

30 out of 36 cases that had bleeding attributable to thrombocytopenia were transfused platelets. 1 case of dengue, 1 case of malaria, 2 cases of undiagnosed aetiology had minimal GI bleed and bleeding subsided spontaneously and hence did not necessitate platelet transfusion. They also had platelet count $>20,000$ at presentation. Malaria patient with bleeding improved spontaneously with treatment of anti-malaria without platelet transfusion. 1 patient of AML who was bleeding succumbed to death before platelets were given. 1 patient of mixed connective tissue disorder had membranoproliferative glomerulonephritis and had massive haematemeses and succumbed to death.

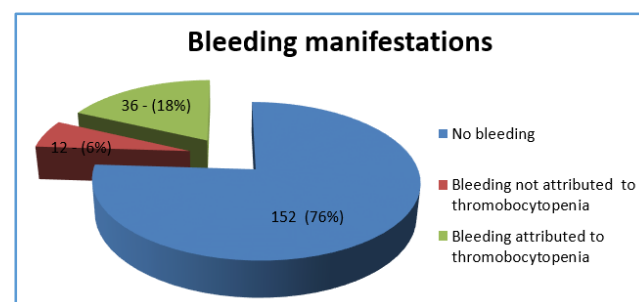


Chart 7: Percentage of Patients With Bleeding Manifestations

Disease	Number of Cases	Proportion of cases
Dengue	7	19.4
Malaria	4	11.1
ITP	6	16.7
HELLP	4	11.1
Malignancy	3	8.3
Undiagnosed Aetiology	2	5.8
Sepsis	3	8.3
Enteric fever	1	2.8
HIV	1	2.8
MDS	2	5.6
CTD	2	5.6
Aplastic Anaemia	1	2.8
Total	36	100%

Table 7: Aetiologies Responsible for Bleeding Manifestations Secondary to Thrombocytopenia and Number of Patients Under Each Category

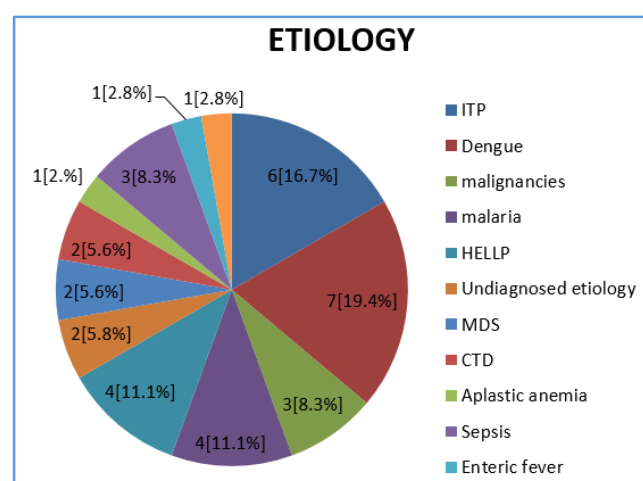


Chart 8: Proportion of Patients Bleeding in Each Group

Disease	Total No. of cases	No. of cases bleed	Proportion
Aplastic anaemia	1	1	100%
MDS	2	2	100%
ITP	9	6	66.7%
Malignancy	6	3	50%
HELLP	12	4	33.3%
CTD	6	2	33.3%
Undiagnosed Aetiology	18	2	11.1%
Malaria	44	4	9.0%
Dengue	60	7	11.7%
Sepsis	10	3	30.0%
Enteric fever	4	1	25.0%
HIV	5	1	20.0%
Total	36		

Table 8: Percentage of Patients Bleeding Among Each Group of Disease

Groups:

Platelet count	Total no. of Patients	No. of pt's with bleeding Manifestations	Percentage
<5000/ μ L	16	11	68.7%
5000-10,000/ μ L	20	13	65%
10,000-20,000/ μ L	22	05	22.7%
20,000-50,000/ μ L	40	04	10%
50,000-1,00,000/ μ L	102	03	2.94%
Total	200	36	

Table 9: Patients with Bleeding Manifestation Under Different Platelet Range

The commonest bleeding manifestation secondary to thrombocytopenia was GIT bleed, which was seen in 12 patients. Petechial rash was found in 8 patients, menorrhagia was seen in 5 patients, 4 patients had epistaxis, 4 had haematuria, 2 patients had gum bleed, and 1 had IC bleed secondary to thrombocytopenia.

Bleeding manifestations	No. of patients	Percentage
Melena [GI bleed]	12	33.3%
Petechial rash	08	22.2%
Menorrhagia	05	13.8%
Haematuria	04	11.1%
Epistaxis	04	11.1%
Gum bleed	02	5.5%
IC bleed	01	2.8%

Table 10: Types of Bleeding Manifestation and Number of Cases in Each Type

Note: Some patients had more than one bleeding manifestation, so the most persistent bleeding manifestation was taken into account.

Interventions:

Platelet Transfusions: 46 patients were given platelet transfusions. 30 of these patients had bleeding manifestations and they were given platelet transfusions therapeutically. 16 cases received transfusions prophylactically.

So, bleeding manifestations was the indication for platelet transfusion in 65.2% of patients the rest 34.78% being prophylactic.

Among the prophylactic transfusions [16 cases], 5 had platelet count <5000/ μ L and 6 had platelet count between 5000 to 10,000/ μ L, 2 cases are between 10,000 to 20,000/ μ L, 2 cases between 20,000 to 50,000/ μ L, and one case had platelet count >50,000/ μ L. They were transfused platelets at the discretion of the treating physician.

Steroids: 20 patients had required to be put on steroids. All patients with ITP [9 cases], aplastic anaemia [1 case], connective tissue disorder [6 cases], and sepsis [4 out of 10 cases] were put on steroids as part of their management plan. Steroids were also required as part of sepsis management in 4 patients.

As the study population included cases who were detected for the first time to have thrombocytopenia, the role of splenectomy was not considered in any one of them. All ITP patients were put on steroids and it was too early to decide on surgical management in any one of these cases.

Biologicals: 1 case of ITP did not respond to steroids and she was started on rituximab. Her platelets improved with rituximab.

Indication for Platelet Transfusion	Platelet count	No. of Cases	Indication of Platelet Transfusion
Therapeutic		30	Bleeding
Prophylactic		16	
	<5000/ μ L	5	High risk of bleeding
	5000-10,000/ μ L	6	High risk of bleeding
	10,000-20,000/ μ L	2	Need to undergo bone marrow examination
	20,000-50,000/ μ L	2	Need to undergo bone marrow examination
	50,000-1,00,000/ μ L	1	Elderly with comorbidities

Table 11: Indications for Platelet Transfusions

Aetiology	No. of Patients
ITP	9
Aplastic anaemia	1
Connective tissue disorder	6
Sepsis	4

Table 12: Patients in Whom Steroids Were Used and Their Indications

CONCLUSION:

- This study shows that dengue fever is the commonest diagnosis made in adult patients who are newly detected to have thrombocytopenia at admission to the medicine ward.
- Patients with febrile illness with thrombocytopenia are high likely to be suffering from dengue fever. Malaria and other undiagnosed aetiology are also high in the list of diseases presenting as thrombocytopenia.
- The severity of thrombocytopenia secondary to isolated vivax malaria tends to be more common in India.

- One fifth of patients with platelet count less than 1,00,000/ μ L tend to have bleeding manifestation commonest being GIT bleed, petechial rash, and menorrhagia.
- Majority of the bleeding occurs with platelet count less than 10,000/ μ L. Though more number of patients in infectious group had bleeding manifestations, the number of patients is also high in this group. Though, the number of patients in non-infectious group was less, but almost all had bleeding manifestations.
- The proportion of patients receiving prophylactic platelet transfusion was less than patients receiving transfusion because of presence of a bleeding manifestation.
- There was no definitive trigger value of platelet count below which platelet transfusions were ordered though majority of the prophylactic transfusions were done when platelet count was less than 10,000/ μ L.

SUMMARY:

- Over a period of 12 months between September 2014 and October 2015, 200 adult patients admitted under Department of Medicine and with platelet count less than 1,00,000/ μ L were included in the study. There were 124 males and 76 females with mean age 30 yrs. in both males and females.
- Dengue fever with 30% of the total number of cases was the commonest cause of thrombocytopenia.
- Malaria and undiagnosed aetiology each with 22% and 9% respectively of total number of patients were a close second.
- HELLP (6%), Snake bite (5%), Sepsis (5%), and ITP (4.5%) were the other common causes.
- Plasmodium falciparum malaria accounted for 66% of the malaria cases. Plasmodium vivax was solely the cause for thrombocytopenia in 25% of patients with malaria. 9% had mixed infection.
- 27.3% of patients with Plasmodium vivax malaria had platelet count <40,000/ μ L, but none had <20,000/ μ L.
- Bleeding manifestations were seen in 18% of the study population. 8% of these patients had platelet count <5000/ μ L. 68.7% of those with platelet count <5000/ μ L had bleeding.
- GI bleed (33.3%), petechial rash (22.2%), and menorrhagia (13.8%) were the frequent haemorrhagic manifestations secondary to thrombocytopenia.
- Infectious causes like dengue and malaria was the leading aetiology for bleeding accounting for 41.7% of patients with haemorrhagic manifestation. 100% of patients in aplastic anaemia and MDS group 66.7% of patients in ITP had bleeding manifestations.
- 15.9% of patients in malaria group, 13.3% of patients in dengue group had bleeding manifestations. 100% of patients in aplastic anaemia and MDS group 66.7% of patients in ITP had bleeding manifestations.

- 46 patients were given platelet transfusions. 65.2% of patients had bleeding and hence had required platelet transfusions, the rest were prophylactic.
- 81.3% of those who received platelet transfusion prophylactically had platelet count $<20,000/\mu\text{L}$. No definitive trigger value of platelet count for prophylactic transfusion was observed.

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