Research Article

Clinico pathological profile of spectrum of thrombocytopenic cases – a cross sectional study

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Abstract

Background: Thrombocytopenia is a common finding in many hospitalized patients and its etiology is diverse. **Aim**: This study aimed to do a detailed clinicopathological correlation of various cases of thrombocytopenia in adults by elucidating the various etiological factors, severity of thrombocytopenia, various mode of clinical presentation and the proportion of patients presenting with bleeding manifestations. **Materials and Methods:** This is a cross sectional study done for a period of 2 months. The relevant clinical and investigatory findings all patients with a platelet count of less than 1,50,000 were collected from the patients' medical records. **Results:** A total of 120 patients were included out of which 71 (59.2%) males and 49 (40.8%) females and most of the study population belonged to 20-60 age group. The platelet count was <50,000 - 24(20%), 50,000 – 1,00,000 – 65 (54.2%), 1,00,000 to 1,50,000 - 31(25.8%). The etiological diagnosis of patients were Dengue - 26 (21.67%), Malaria – 8(6.7%), Enteric fever – 7 (5.9%), Septicemia – 6(5%), Chronic liver disease – 20 (16.7%), Chronic kidney disease – 4 (3.4%), Diabetes – 9 (7.7%), Malignancy – 2 (1.67%), Coronary artery disease – 4 (3.4%), Pregnancy – 6 (5%) Hematological disorders – 22 (18.4%) and miscellaneous – 6 (5%). 54 (45%) presented with fever and 16 (13.3%) with bleeding manifestations. **Conclusion:** Infectious diseases was the most common cause of thrombocytopenia. Chronic liver disease was the commonest non infectious cause followed by diabetes. Most presented with fever followed by bleeding manifestations. Early recognition and continuous monitoring of patients with thrombocytopenia can avoid bleeding manifestations including fatal intra cranial haemorrhage.

Keywords: Thrombocytopenia, Bleeding manifestations, Platelet count, Dengue, Chronic liver disease.

Introduction

Thrombocytopenia is one of the common finding in large number of hospitalized patients which may often missed if platelet counts are not evaluated routinely. Platelet counts below 1,50,000 define thrombocytopenia, but they do not reveal the underlying pathology [1]. Thrombocytopenia can result from decreased production from the bone marrow, increased peripheral destruction, abnormal sequestration and pooling [2]. Early recognition and continuous monitoring of patients with thrombocytopenia can avoid bleeding manifestations including fatal intra cranial haemorrhage. Many studies had elucidated on the cause of febrile thrombocytopenia in hospitalized patients and focused on Dengue. Apart from infectious etiology, there are other causes of thrombocytopenia in patients. Hence this study attempted to find the various etiologies of thrombocytopenia in hospitalized patients with a clinicopathological correlation of their presenting features.

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Aim of the study

The main objective of this study is to do a detailed clinicopathological correlation of various cases of thrombocytopenia in adults presenting to a tertiary care hospital. This study aimed to find the age and gender distribution of the cases, various etiological factors, severity of thrombocytopenia, various mode of clinical presentation and the proportion of patients presenting with bleeding manifestations. This study also attempted

to discuss the mechanism of thrombocytopenia in each category and the occurrence of clinical features and complications in each category.

Materials and Methods

This is a cross sectional study done in a tertiary care centre situated in South india for a period of 2 months. Blood samples of the patients were run in the automated analyser at the clinical pathology laboratory. Patients with baseline platelet count less than 1,50,000, and confirmed with the peripheral smear were included for the study.

Inclusion criteria: All patients of both gender with a platelet count of less than 1,50,000.

Exclusion criteria:

- Patient on antiplatelet drugs and other medications causing thrombocytopenia.
- Patients whose clinical details were not available.

The age and gender distribution of the cases, the relevant clinical findings like mode of presentation of the patients, associated bleeding manifestations and other relevant investigatory findings needed to arrive at the exact etiological diagnosis were collected including peripheral smear for confirming platelet count and Malarial cases, Bone marrow aspirates, serology for HIV, WIDAL, and other infectious diseases were collected from the patients' medical records.

Statistical analysis: The Data collected were tabulated in the Microsoft excel and analysed for frequency of each diagnosis, its percentage, distribution among age and gender, the grading of severity of thrombocytopenia cases and the occurrence of symptoms and signs in each category.

Results

During the study period a total of 120 patients of thrombocytopenia were included. The age and gender wise distribution of the study population presenting with Thrombocytopenia is shown in Table.1. The study participants included 71 (59.2%) males and 49 (40.8%) females. Most of the cases of our study belonged to the age group 41 – 60 years – 45 cases (37.4%), followed by 21 – 40 years – 40 cases (33.4%), followed by less than 20 years – 18 cases (15%) and the least being the age group - > 60 – 17 cases (14.2%). The platelet count of patients presenting with thrombocytopenia were graded and were shown in Table.2. 24 patients (20%) in our study population presented with a platelet count of less than 50,000. Majority of the patients – 65 (54.2%) presented with a platelet count between 50,000 – 1,00,000 and 31 patients (25.8%) presented with a platelet count between 1,00,000 to 1,50,000.

Table-1: Age and Gender wise distribution of the patients presenting with Thrombocytopenia.

Age group	Gender		Total
	Male	Female	Number (Percentage)
< 20	11	7	18 (15)
20 - 40	26	14	40 (33.4)
41 - 60	26	19	45 (37.4)
>60	8	9	17 (14.2)
Total	71	49	120 (100)

Table-2: Platelet count of patients presenting with Thrombocytopenia.

Sl.No.	Platelet count (in cumm)	Number of patients	Percentage
1	< 50,000	24	20
2	50,000 – 1,00,000	65	54.2
3	1,00,000 – 1,50,000	31	25.8
	Total	120	100

The etiological diagnosis of patients with thrombocytopenia is shown in Table.3. Out of 120 patients of our study population, 26 (21.67%) had a diagnosis of Dengue. The other diagnosis were Malaria – 8 (6.7%), Enteric fever – 7 (5.9%), Septicemia – 6 (5%), Chronic liver disease – 20 (16.7%), Chronic kidney disease – 4 (3.4%), Diabetes – 9

(7.7%), Malignancy – 2 (1.67%), Coronary artery disease – 4 (3.4%), Pregnancy – 6 (5%) Hematological disorders – 22 (18.4%) and miscellaneous – 6 (5%).

Table-3: Etiological diagnosis of patients with Thrombocytopenia.

Sl.No.	Etiological diagnosis	Number of cases (Percentage)
1	Dengue	26 (21.67)
2	Malaria	8 (6.7)
3	Enteric fever	7 (5.9)
4	Septicemia	6 (5)
5	Chronic liver disease	20 (16.7)
6	Chronic kidney disease	4 ((3.4)
7	Diabetes	9 (7.7)
8	Malignancy	2 (1.67)
9	Coronary artery disease	4 (3.4)
10	Pregnancy	6 (5)
11	Hematological disorders	22 (18.4)
12	Miscellaneous	6 (5)
	Total	**120 (100)**

Table-4: Clinical presentation of patients with Thrombocytopenia.

Sl.No.	Presenting complaint	Number of cases (Percentage)
1	Fever	54 (45)
2	Bleeding	16 (13.3)
3	Splenomegaly	11 (9.2)
4	Arthralgia and Myalgia	21 (17.5)
5	Jaundice	7 (5.8)
6	Hepatomegaly	6 (5)
7	Lymphadenopathy	2 (1.67)
8	Abdominal distension	12 (10)
9	Breathlessness	10 (8.3)
10	Others	12 (10)

The Clinical presentation of patients with Thrombocytopenia is shown in Table.4. Most of the patients 54 (45%) in our study presented with fever. The other presenting complaints were Bleeding manifestations – 16 (13.3%), Splenomegaly – 11(9.2%), Arthralgia and Myalgia - 21 (17.5), Jaundice – 7 (5.8%), Hepatomegaly – 6 (5%), Lymphadenopathy – 2 (1.67%), abdominal distension – 12 (10%), Breathlessness – 10 (8.3%) and other non specific complaints – 12 (10%)

Discussion

The age and severity of thrombocytopenia and associated findings in this study are similar to that of other studies [3,4]. The most common cause of newly diagnosed thrombocytopenia in this study is of infectious etiology and Dengue was the most common cause. Various mechanisms have been hypothesized to explain the mechanism of thrombocytopenia in Dengue infections [5]. Bone marrow suppression during the acute phase of the illness can occur because of affected progenitor cells and infected stromal cells and dysregulated bone marrow production(5).

Thrombocytopenia can also occur because of platelet sequestration [6], activation of the complement system and consumptive coagulopathy[7]. Autoantibodies against blood-coagulation-related molecules and endothelial cells have been described and antiplatelet antibodies have been implicated in platelet lysis [8-10].

Mild to moderate thrombocytopenia is a common finding in all forms of malaria, but severe thrombocytopenia is very common in falciparum malaria. In our study, we encountered 8 cases of

malaria, out of which 1 case of falciparum malaria had platelet count of 40,000 and rest 7 cases of vivax malaria had counts between 50,000 to 1,00,000. None of them had bleeding manifestations. Different mechanism contribute to thrombocytopenia in malaria including direct lysis of platelets by plasmodium by both immunological and non-immunological mechanisms [11], oxidative stress mediated destruction [12] of the platelets. Thrombocytopenia in malaria is well tolerated because of platelet activation and enhanced agreeability [13] and bleeding manifestations are rare in acute episodes of malaria because of the hyperactive platelets enhancing the hemostatic responses [14].

Bicytopenia and subclinical disseminated intravascular coagulation is a very common finding in enteric fever which is contributed by bone marrow suppression and hemophagocytosis [15]. Pancytopenia and isolated thrombocytopenia in enteric fever is rare [16]. This is because hematological findings in enteric fever may not follow a prototype pattern in presentation in tropical regions [17]. But a differential diagnosis of enteric fever should also be kept in mind when evaluating a patient of fever with isolated thrombocytopenia [18].

Thrombocytopenia is an early finding in septicemia and can give a clue to the treating physician in clinically suspected cases and has prognostic significance during the management [19]. It can result from activation of the platelets which bind to the endothelium and get sequestered [20,21]. Immunologically mediated destruction of platelets can also occur by non specific antibodies [22] and hemophagocytosis [23, 24].

Thrombocytopenia in liver disease occurs because of portal hypertension and splenic sequestration [25]. The liver being the site of thrombopoietin, reduction of functional liver cell mass in chronic liver diseases, leads to suppressed thrombopoiesis and subsequent peripheral thrombocytopenia [26]. Mild thrombocytopenia is frequently encountered in chronic kidney disease possibly because of reduced thrombopoietic activity [27]. Platelet dysfunction and impaired platelet-vessel wall interaction may also add on and can result in complex hemostatic disorders in patients with end stage renal disease [28].

Thrombocytopenia in malignancies is contributed by diverse factors like systemic chemotherapy, involvement of marrow by tumour, microangiopathic disorders and secondary immune thrombocytopenia [29]. Gestational thrombocytopenia during the third trimester, with postpartum resolution is the most common cause of thrombocytopenia in pregnancy [30].

Preeclampsia and HELLP syndrome and Immune thrombocytopenic purpura can pose life threatening complications during pregnancy [31]. 4 out of 6 our patients had gestational thrombocytopenia and none presented with bleeding manifestations.

Apart from above conditions thrombocytopenia can occur as a combined or isolated finding in many hematological conditions like megaloblastic anemia, aplastic anemia and hypersplenism. Iron deficiency anemia is commonly associated with reactive thrombocytosis, but thrombocytopenia can occur in severe cases [32]. The miscellaneous causes of thrombocytopenia were infections like HIV, connective tissue disorders and drug induced.

Conclusion

In our study, most of the study population belonged to 20-60 age group and majority presented with moderate thrombocytopenia (50,000 – 1,00,000). Infectious diseases was the most common cause of thrombocytopenia, among which dengue constituted the highest proportion followed by malaria, enteric fever and septicemia cases. Thrombocytopenia due to chronic liver disease was the commonest non infectious cause apart from hematological conditions followed by diabetes. Most of the thrombocytopenic patients presented with fever followed by bleeding manifestations. Early recognition and continuous monitoring of patients with thrombocytopenia can avoid bleeding manifestations including fatal intra cranial haemorrhage.

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