

One year study of thrombocytopenia in a peripheral hospital of Mumbai

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Abstract: Background: Thrombocytopenia (TCP) is often discovered incidently during the evaluation of a complete blood count. Presence of TCP should prompt further investigation of the patient for the correct identification of its underlying cause.

Objectives: The objective of this study was to find out the incidence of thrombocytopenia in patients who were routinely advised a complete blood count (CBC) in a peripheral hospital of Mumbai. Cases of TCP were further analysed and evaluated to find its underlying cause.

Materials and methods :A one year prospective hospital based study was undertaken .There were 15,000 patients(indoor and outdoor) who had a routine CBC done during this period. All hemograms were scrutinized and 375 patients with TCP were selected for the study.Further evaluation of these cases was carried out by clinical history, examination and investigations. Peripheral smear examination, tests for malaria,dengue, leptospirosis,HIV,HbSAg, and liver function tests were done in all cases. Blood culture,coagulation profile and bone marrow examination was done based on individual case.

Results:Out of 15000 patients, 375 of them had thrombocytopenia. In 300 cases the cause of thrombocytopenia could be found out.The common causes were malaria (29.67%) ,megaloblastic anaemia (15.67%), septicemia (12.67%), dengue(10%), liver disorders (7.33%) and leptospirosis(6.67%).Thrombocytopenia was mild in 23.33%,moderate in 41.33% cases and severe in 35.33% cases.

Conclusions: Infections like malaria, dengue, leptospirosis and septicemia were the common causes of thrombocytopenia along with megaloblastic anaemia.Whenever thrombocytopenia is detected further investigations can help us in reaching a correct diagnosis in the majority of the cases so that appropriate treatment can be given.

Key words: thrombocytopenia, infections, megaloblastic, anaemia.

I. INTRODUCTION

Thrombocytopenia (TCP) refers to a reduction in platelet count below 1.5lakh/microlitre.⁽¹⁾It is the commonest platelet abnormality encountered in clinical practice with variable clinical expression.With the widespread use of automated cell counters clinicians in any field may encounter TCP.The symptomatology may vary greatly and the underlying cause may be either inconsequential or life threatening.⁽²⁾ In a tropical country like India infectious causes predominate and are usually associated with fever.⁽³⁾TCP may give a clue to presence of infections like malaria, dengue, leptospirosis and viral infections.The present study was undertaken to study and evaluate the cases of TCP detected on a routine hemogram of both outpatients and inpatients over a period of one year.Severe TCP was seen in cases of malaria, dengue ,septicemia and disseminated intravascular coagulation(DIC) which can be life threatening. The presence of TCP in a hemogram should alert the physician to identify the underlying etiology for the prompt management of the patient.

II. MATERIALS AND METHODS

A prospective observational study was undertaken in the department of pathology at Dr.R.N.Cooper Municipal general Hospital for a period of one year from January 2011 till December 2011.During this period 15,000 hemograms of both outpatients and inpatients were done on a fully automated analyser(Mythic -18). Platelet count was confirmed by a peripheral smear examination. Out of these cases 375 patients who had a platelet count of <1.5lakh/microliter were included in the study. A complete medical history and findings of clinical examination were recorded for all cases.

Laboratory tests for malaria (PS examination), dengue (NS1 antigen), leptospirosis (leptocheck dritot antibody), HIV and HbSAg (ELISA test) and liver function tests were done in all cases. Some hematological

tests like bleeding time, clotting time, prothrombin time, activated prothrombin time, D-dimer and bone marrow examination was done in selected cases depending on the requirement of the individual case. With the help of above investigations the cause of TCP was diagnosed in 300 cases which formed the study group. TCP was classified into mild (platelet count: 1 lakh to 1.5 lakh/microliter), moderate (Platelet count: 50,000 to 1 lakh/microliter) and severe (platelet count <50,000/microliter) groups depending on the platelet count.

III. RESULTS

Out of the 15,000 patients who had been advised complete blood count during the study period, TCP was seen in 375 cases giving an incidence of 2.5%. After the investigations, the underlying cause was found in 300 cases. No cause of TCP could be found in 75 cases and these were excluded from the study. There were 176 (58.67%) males and 124 (41.33%) females. Adults comprised 243 patients and there were 57 children included in the study. Age distribution is given in (Table 1). There were 68 cases (22.67%) seen in the 21-30 year age group followed by 58 patients in the 31-40 year age group (19.33%).

Causes of thrombocytopenia.

The conditions associated with TCP are given in (Table 2). The most common cause observed was malaria (29.67%) followed by megaloblastic anaemia (15.67%), septicemia (12.67%), dengue (10%), liver disorders (7.33%), leptospirosis (6.67%), HIV infection (3.33%), idiopathic thrombocytopenic purpura (ITP) (3.33%), leukemia (1.67%) and tuberculosis (1.67%). Table 3 summarizes the miscellaneous causes of TCP which were found in 27 cases (9%).

Grade of thrombocytopenia

There were 70 (23.33%) patients with platelet count between 1-1.5 lakh/cumm, 124 patients (41.33%) with platelet count between 50000-1 lakh/cumm and 106 patients (35.33%) with platelet count of less than 50,000/cumm. The conditions associated with TCP along with grade is given in (Table 4). Severe thrombocytopenia was found in many cases of malaria, dengue, septicemia, DIC, ITP and hematological malignancies. There were 3 cases of snake bite which presented with severe TCP.

Clinical features.

The main presenting features in patients with TCP were fever 205 cases (68.3%), hemorrhagic manifestations 70 cases (23.3%), hepatomegaly 48 cases (16%), splenomegaly 46 cases (15.3%) and lymphadenopathy 16 cases (5.3%). The clinical presentation with bleeding tendencies was seen in 70 cases in which 40 cases had severe TCP and 30 cases had moderate TCP.

IV. DISCUSSION

It is common for a pathologist to encounter a hematological profile with a low platelet count. Thrombocytopenia is the commonest platelet abnormality encountered in the clinical practice. In the present study out of 15,000 hemograms studied there were 375 cases of TCP giving an incidence of 2.5%. Nadir et al have studied 18,000 hemograms and reported an incidence of 2.3% cases of TCP in their study⁽⁴⁾. Hanes et al have reported 25 to 41% cases of thrombocytopenia in ICU patients.⁽⁵⁾ There was a male predominance with a male female ratio of 1.42:1. Maximum incidence was seen in the 21-30 years age group. In a study by Shah et al⁽⁶⁾ maximum cases of thrombocytopenia were also found in the 21-30 years age group and male preponderance was seen as in our study.

There were 300 patients of TCP who were evaluated to find out its underlying cause. The most common underlying causes seen were malaria, megaloblastic anaemia, septicemia, liver disorders, dengue and leptospirosis. In a similar study Nadir et al have reported viral infections, malaria, septicemia and megaloblastic anaemia to be the commonest causes of TCP.⁽⁴⁾ Nair et al have studied febrile TCP in 109 cases and found infectious etiology to be the commonest cause associated with TCP.⁽³⁾ In a tropical country like India presence of TCP may give a clue to infections like malaria, dengue or leptospirosis. Among the non infectious causes megaloblastic anaemia is the most frequent cause associated with TCP as reported in other studies. Malaria was the commonest cause of TCP with 89 (29.67%) cases. Nadir et al reported 17% cases while Shah et al reported 31% cases of malaria in their study on TCP. In many studies on malaria TCP has been reported in 60% to 70% cases.^(7,8,9) It is reported in both vivax and falciparum infections as was seen in the present study. The second commonest cause of TCP was megaloblastic anaemia with 47 cases (15.67%). Chandrashekhar et al have reported 55.5% cases of TCP in their study on megaloblastic anaemia.⁽¹⁰⁾ Severe TCP has been found in one fourth cases of megaloblastic anaemia in some studies.⁽¹¹⁾ Megaloblastic anaemia is an important cause of pancytopenia which was seen in 32 (68.1%) cases. Patients with sepsis have varying degree of TCP which can be associated with DIC. Septicemia was seen in 38 (12.67%) of our cases while Nair et al reported it in 26.6% of their patients with TCP.⁽³⁾ There were seven cases of septicemia which progressed to DIC in our study.

Cases with DIC had severe or moderate TCP as reported by Chuansumrit et al who revealed TCP in 85.8% of their cases.⁽¹²⁾ Dengue comprised 10% of our cases with TCP. Many studies have shown an association of dengue with TCP which if severe can lead to bleeding tendency.^(13,14,15) Leptospirosis can also present with TCP.^(16,17) In our cases 35% cases of leptospirosis had bleeding manifestations along with abnormal renal function. Idiopathic thrombocytopenic purpura is an important cause of TCP which was seen only in 2.33 % of our cases. Majority of patients had severe TCP with bleeding tendency as reported in other studies.^(18,19) Lokeshwar et al⁽²⁰⁾ have reported 80% patients of ITP had platelet count less than 40,000. Hematological malignancies usually present with thrombocytopenia and bleeding tendency which was seen in our cases.⁽²¹⁾ There were 70 (23.33%) cases in our study who presented with hemorrhagic manifestations. Nair et al have reported bleeding manifestations in 41.3% of their cases while Shah et al have reported them in 30% of their cases.^(3,6) Among these cases 40 patients presented with severe and 30 cases had moderate TCP. Hence in rest of the cases though TCP was present it was not associated with bleeding manifestations. Other symptoms of fever, splenomegaly hepatomegaly and lymphadenopathy found in our cases has also been reported by Shah et al in their study on clinical presentation of TCP.⁽⁶⁾

Conclusion

Thrombocytopenia, a common observation in hemograms needs a systematic evaluation to find out the underlying secondary cause which can be of infective or noninfective etiology. All cases of TCP may not have a bleeding manifestation and may be asymptomatic at initial presentation. However in few cases it may lead to severe bleeding which may be life threatening for the patient. Hence immediate recognition of the underlying etiology will prompt timely patient management. In our set up infections like malaria dengue septicemia and megaloblastic anaemia are usually associated with TCP.

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TABLES :

1.Table 1:Age distribution of cases of thrombocytopenia

Age (years)	No. of cases (%)
0 – 10	45 (15)
11 – 20	48 (16)
21 – 30	68 (22.67)
31 – 40	58 (19.33)
41 – 50	42 (14)
51 – 60	19 (6.33)
> 60	20 (6.67)
TOTAL	300 (100)

Table 2: Conditions associated with thrombocytopenia

Sr No.	Conditions	No. of cases (%)
1.	Malaria	89 (29.67)
2.	Megaloblastic anemia	47 (15.67)
3.	Septicemia	38 (12.67)
4.	Dengue	30 (10)
5.	Liver disorders	22 (7.33)
6.	Leptospirosis	20 (6.67)
7.	HIV infection	10 (3.33)
8.	Idiopathic thrombocytopenic purpura (ITP)	07 (2.33)
9.	Tuberculosis	05 (1.67)
10.	Leukemia	05 (1.67)
11.	Miscellaneous	27 (9)
	TOTAL	300 (100)

Table 3.Miscellaneous conditions associated with thrombocytopenia

Sr No.	Conditions	No. of cases (% of total cases)
1.	Snake bite	04 (1.33)
2	DIC	04 (1.33)
3.	Road traffic accident/ Stab injury	03 (01)
4.	Malignant tumors	03 (01)
4.	Drug induced	03 (01)
5.	Myelodysplastic syndrome	02 (0.67)
6.	Aplastic anemia	02 (0.67)
7.	Typhoid	02 (0.67)
8.	Hemorrhoides	02 (0.67)
9.	Niemann-Pick disease	01 (0.33)
10.	Kala-azar	01 (0.33)
	TOTAL	27 (9)

Table 4: Degree of thrombocytopenia in various conditions

Sr. No.	Conditions	Mild thrombocytopenia (%) [*]	Moderate thrombocytopenia (%) [*]	Severe thrombocytopenia (%) [*]	Total (%) [*]
1.	Malaria	12 (4%)	39 (13%)	38 (12.67)	89 (29.67%)
2.	Megaloblastic anemia	13 (4.33)	23 (7.67)	11 (3.67)	47 (15.67)
3.	Septicemia and/or DIC	15 (5)	11 (3.67)	16 (5.33)	42 (14)
4.	Dengue infection	07 (2.33)	07 (2.33)	16 (5.33)	30 (10)
5.	Liver disorders	11 (3.67)	10 (3.33)	01 (0.33)	22 (7.33)
6.	Leptospirosis	09 (3)	10 (3.33)	01 (0.33)	20 (6.67)
7.	HIV infection	01 (0.33)	07 (2.33)	02 (0.67)	10 (3.33)
8.	ITP	0 (0)	01 (0.33)	06 (2)	07 (2.33)
9.	Leukemia	01 (0.33)	02 (0.67)	02 (0.67)	05 (1.66)
10.	Tuberculosis	0 (0)	03 (1)	02 (0.67)	05 (1.67)
11.	Miscellaneous	01 (0.33)	11 (3.67)	11 (3.67)	23 (7.67)
	TOTAL	70(23.33)	124 (41.33)	106 (35.34)	300(100)