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Original Research Article

Clinical Study of Thrombocytopenia

Authors
Dr Shankarappa R S[1], Dr Naveen K[2*]
[1]Assistant Professor, Department of General Medicine, Shridevi Institute of Medical Sciences, Tumakuru, Karnataka, India
[2]Associate Professor, Department of General Medicine, Shridevi Institute of Medical Sciences, Tumakuru, Karnataka, India
*Corresponding Author
Dr Naveen K
Associate Professor, Department of Medicine, Shridevi Institute of Medical Sciences, Sira road, NH4, Tumakuru, Karnataka, India, 572106

Abstract
Background: *Thrombocytopenia is the commonest platelet abnormality encountered in clinical practice with variable clinical manifestations. Clinicians may encounter many cases of thrombocytopenia which requires systematic evaluation to find out the underlying cause.*
Methods: *It is a prospective study conducted in Department of General Medicine, Shridevi institute of medical sciences and research hospital, Tumakuru, for a period of one year from November 2018 to October 2019. There are 100 patients satisfying the criteria of thrombocytopenia who are included in the study. Further evaluation of these cases based on clinical history, clinical signs, detailed physical and systemic examination, laboratory investigations and underlying etiology were carried out.*
Result: *Out of 100 patients with thrombocytopenia, 60% were Males. The highest incidence in the age group of 15-30 years constituting 42%. Fever is the most common presenting complaint constituting 59% followed by Pain abdomen and vomiting in 23%.Out of the 100 patients in the study,14% had mild,54% had moderate and 32% had severe thrombocytopenia. The commonest investigation abnormalities are 38% positive Dengue serology, 19% pancytopenia,35% leucopenia,24% anaemia,16% altered renal function,17% altered hepatic function and 23% significant abdominal sonographic findings. The commonest cause of thrombocytopenia are infections like Dengue in 38% of cases and septicaemia in 20% of cases followed by Chronic liver disease in 8% cases.*
Conclusion: *The most common cause of thrombocytopenia in the study are infections like Dengue fever and septicaemia followed by Chronic liver disease. Thrombocytopenia requires detailed systematic evaluation to find out the underlying cause and it resolves spontaneously on treating the cause.*
Keywords: *Symptoms, Signs, Etiology, Thrombocytopenia.*

Introduction

Thrombocytopenia is the commonest platelet abnormality encountered in clinical practice with variable clinical manifestations. The clinical manifestations vary widely from inconsequential to life threatening depending on the underlying cause.[1] Thrombocytopenia may give a clue to the presence of infections like dengue, malaria, leptospirosis or other viral infections. Vitamin B12 and Folate deficiency are the main nutritional

causes of thrombocytopenia. Other causes of thrombocytopenia include chronic liver disorders, hematological disorders affecting bone marrow like aplastic anaemia or leukemia or lymphoma, exposure to radiation or chemotherapy, long term consumption of alcohol or drugs. In tropical countries like India infections are the predominant cause of thrombocytopenia. Thrombocytopenia refers to reduction in platelet count below 1.5 lakhs/microliter in peripheral blood.[2]The lifespan of platelet is around 7-10 days and about 10 percent are destroyed each day.[3]

Thrombocytopenia result from impaired platelet production, accelerated destruction, dilutional or splenic sequestration.[4] Clinicians may encounter many cases of thrombocytopenia with widespread use of automated cell counters. Because platelet counts are prone to errors a single platelet count that is lower than normal should be confirmed by a second count. All automated cell counter reports should be confirmed by inspecting the peripheral blood smear. Thrombocytopenia is classified based on platelet count as mild when platelet count is 1.0 to 1.5 lakhs/microliter, moderate when platelet count is 0.5 to 1.0 lakh/microliter and severe when platelet count is less than 0.5 lakh/microliter of blood. The present study was undertaken in a referral hospital situated at the southern part of Karnataka which provides services including platelet transfusion. The objective of the study is to analyze the clinical manifestations including the symptoms and signs, etiology and severity of thrombocytopenia in different age group and sex among inpatients admitted under Department of Medicine, SIMSRH, Tumakuru.

Material and Methods

It is a prospective study conducted for a period of one year from November 2018 to October 2019 .The study was conducted from the Department of General Medicine, Shridevi institute of medical sciences and research hospital, Tumakuru (SIMSRH) which provides health care services to both rural and urban population. All the patients admitted under the Department of General Medicine, with platelet counts less than 1.5 lakh per microliter, were included in the study. Patients admitted to other Departments of Shridevi institute of Medical sciences and research hospital, Tumkuru (SIMSRH), where physician opinion was sought for platelet count less than 1.5 lakhs per microliter were also included in the study.All the patients whose age is less than 15 years were excluded from the study. All the patients who were diagnosed as chronic thrombocytopenia, malignancies and who are on chemotherapy were excluded from the study.

Detailed clinical history was noted in a prescribed proforma including age, sex, economic status of all the patients satisfying the criteria of thrombocytopenia. Clinical symptoms like fever, generalized weakness, breathlessness, cough, headache, pain abdomen, vomiting and bleeding manifestations like haematuria, bleeding gums, haematemesis were recorded in the proforma. Detailed physical examination was done in all the patients and significant clinical signs like hypotension, purpuric spots, pallor, icterus, hepatomegaly, splenomegaly, febrile status were recorded in the proforma. All patients were subjected to hematological investigations like Complete blood count where 3ml of blood was collected after venipuncture in Ethylene diamine tetraaceticacid (EDTA vacutainer) under aseptic precautions and analyzed for haemoglobin, leukocyte count and platelet count by using Automated Analyser .All analyser reports were confirmed by pathologist by doing peripheral blood smear examination. All patients were analyzed for Random Blood Sugar and Urine analysis. Other laboratory investigations were performed as per the individual patient requirement like Malarial parasite, Widal test, Dengue NS1 Antigen , IgM and IgG Antibodies, Liver Function tests, Renal Function tests, Vitamin B12 Assay, Iron profile, Prothrombin time, INR, Abdominal sonography, Chest radiography. All the collected data were entered and analyzed in fixed proforma. Patients were

classified as mild, moderate and severe thrombocytopenia as per the platelet count.

Results

There are 100 patients fulfilling the criteria of thrombocytopenia. Among them 60 are male and 40 are female patients. (Table No 1)

Study includes age group from 16 years to 70 years. The highest incidence of thrombocytopenia found in the age group of 15 to 30 years in 42 cases followed by 46 to 60 years in 28 cases,31-45 years in 22 cases. The lowest incidence being in the age group above 60 years in 8 cases.(Figure 1)

The commonest presentation in the study is fever in 59 patients followed by generalized weakness in 33 patients; Gastrointestinal symptoms like pain abdomen and vomiting in 23 patients; cough in 13 patients; headache in 12patients and bleeding manifestations in the form of haematuria, bleeding gums and petechiae among 10 patients. (Table 2)

The commonest clinical signs present in the study are pyrexia in 59, tender abdomen in 23,pallor in 21, hepatomegaly in 20,icterus in 12 and splenomegaly in 1 patient. There are 8 cases who presented with hypotension and 1 patient each had rigid neck and purpuric spots. (Figure 2).

Among 100 patients of thrombocytopenia in the study, 54 patients had moderate thrombocytopenia, 32 patients had severe and 14 patients had mild thrombocytopenia. (Table 3).

Among 100 patients of thrombocytopenia in the study, 19 patients had pancytopenia, 35 patients had leucopenia,11 patients had leukocytosis and 24 patients had anemia out of which 6 patients had macrocytic anaemia. Sonographic studies revealed presence of edema of gallbladder wall in 23 patients, hepatomegaly in 20 patients and splenomegaly in 1 patient. Among the above patients in the study, 17 patients had abnormal Liver Function Tests, 16 had abnormal Renal function tests, 15 had abnormal Chest Radiography, 16 had abnormal urinary findings, out of which 10 had proteinuria, 3 had hematuria, 2 had pyuria. Among the infective causes,38 patients were positive for Dengue serology out of which 27 were NS1 antigen positive,10 were IgM antibody positive and 9 were IgG antibody positive. 2 patients were positive for Widal antibody titres. There were 4 Diabetic patients. (Figure 3)

Among the patients in the study, 20 patients had sepsis, 38 patients were positive for Dengue out of which 27 are NS1 antigen positive, 10 are IgM positive, 9 are IgG positive, 2 are Widal positive. There are 8 patients with Chronic Liver Disease and 2 patients with Chronic Kidney Disease. There are 6 patients of Megaloblastic Anaemia and 18 patients of Iron Deficiency Anaemia. (Table 4)

All the patients were given disease specific treatment including platelet transfusion in 21 patients. There is no mortality in the study.

Table 1: Thrombocytopenia cases in male and female

SEX	NO OF PATIENTS
MALE	60
FEMALE	40
TOTAL	100

Table 2: Clinical symptomatology in thrombocytopenia patients

CLINICAL SYMPTOMS	NO. OF PATIENTS
FEVER	59
GENERALISED WEAKNESS	33
PAIN ABDOMEN AND VOMITING	23
COUGH	13
HEADACHE	12
BLEEDING MANIFESTATIONS	10
BREATHLESSNESS	5

Table 3: Severity of thrombocytopenia

SEVERITY OF THROMBOCYTOPENIA	NO OF PATIENTS
MILD	14
MODERATE	54
SEVERE	32
TOTAL	100

Table 4-Etiology of thrombocytopenia

ETIOLOGY	NO OF PATIENTS
DENGUE FEVER	38
SEPTICAEMIA	20
IRON DEFICIENCY ANAEMIA	18
CHRONIC LIVER DISEASE	8
MEGALOBLASTIC ANAEMIA	6
CHRONIC KIDNEY DISEASE	2
ENTERIC FEVER	2
MISCELLANEOUS	6

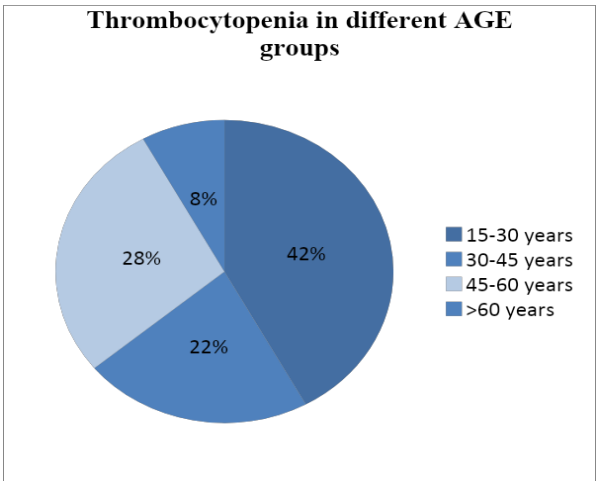

Figure 1: Thrombocytopenia cases in different age groups

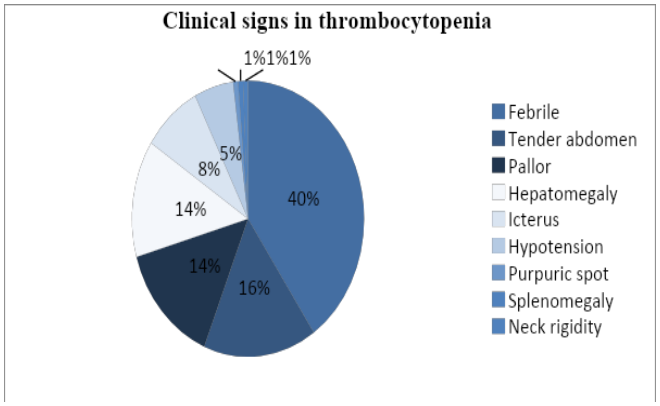

Figure 2: Clinical signs in thrombocytopenia

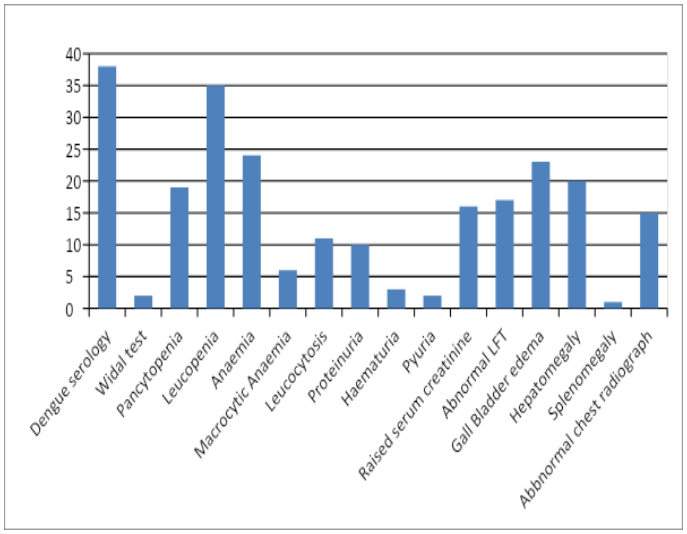

Figure 3: Investigation abnormality in thrombocytopenia

Discussion

Thrombocytopenia is the commonest platelet abnormality encountered in clinical practice. The maximum incidence of thrombocytopenia is in the age group of 15-30 years constituting 42% in the present study which correlates with 36.1% in the study by Raghavendra Mural et al.[5] and 36.67% in the study by Yasmeen Khatib et al.[6].The lowest incidence is observed in patients above the age group of 61 years constituting 8% in the present study which correlates with11.1% in the study by Raghavendra Mural et al. [5] and 6.67% in the study by Yasmeen Khatib et al.[6]. The study also correlates with the study by Suresh et al.[7] which showed 21-40 years as the commonest age group. There was male preponderance of 60% compared to 40% females in the present study which correlates with 54% males and 46% females in the study by Suresh et al.[7] 76% males and 24% females in the study by Nair P S et al.[8].The commonest presenting complaint was fever in 59% of cases which correlates with 68.3% of cases in the study by Yasmeen Khatib et al.[6].Other clinical symptoms being pain abdomen and vomiting in 23%; cough in 13% of cases. Symptoms of bleeding were present in 10% of cases in the present study compared to 23.33% in the study by Yasmeen Khatib et al.[6] ,41.3% in Nair P S et al.[8] , 30% in Shah et al.[9] and 19.44% of cases in the study by Raghavendra Mural et al.[5] .The commonest clinical signs encountered in the present study was fever in 59%;abdominal tenderness in 23%, hepatomegaly in 20% of cases, comparable with fever in 68.3% cases, hepatomegaly in 16% cases in the study by Yasmeen Khatib et al.[6] These symptoms of fever, hepatomegaly, bleeding manifestations were also reported by Shah et al.[9] and Patil P et al.[10] in their study. Gastrointestinal symptoms like abdominal pain,vomiting and tender abdomen are more in the present study which may be attributable to Dengue fever. The sonographic finding of gall bladder edema and hepatomegaly was also more in the present study which can also be attributable to Dengue fever. This study shows 32% with severe thrombocytopenia, 54% with moderate and 14% with mild thrombocytopenia which was comparable with 35.34% of severe,41.3% of moderate and 23.3% of mild thrombocytopenia in

study by Yasmeen Khatib et al.[6].The most common underlying cause was infective like Dengue in 38%; septicaemia in 20% and Enteric fever in 2% of cases followed by Haematological disorder like Pancytopenia in 19%;Anaemia in 24% and Megaloblastic Anaemia in 6%;Chronic liver disorder in 8% and Chronic Kidney disease in 2% of cases. Many studies have shown an association of Dengue with thrombocytopenia which if severe can lead to bleeding tendency. The present study showed higher incidence of Dengue of 38% compared to 10% in the study by Yasmeen et al.[6], 13.8% in the study by Raghavendra et al.[5]. This might be due to more references for platelet transfusion as there is higher incidence of Dengue cases in this part and this institution being an institution for platelet transfusion. Nair et al[8] have reported infectious etiology as the commonest cause associated with thrombocytopenia. Among the non infective causes Megaloblastic anaemia is the most frequent cause associated with thrombocytopenia as reported in other studies. The present study shows 6% of cases with Megaloblastic anaemia compared to 15.67% by Yasmeen Khatib et al.[6]; 14% by Raghavendra Mural et al.[5].In a similar study by Ali N et al.[11], viral infections, malaria, septicaemia, megaloblastic anemia are the commest causes of thrombocytopenia. Other commonest etiology being septicaemia in 20% cases compared to 12.67% in the study by Yasmeen Khatib et al.[6], 16.6% by Raghavendra mural et al.[5], 26.6% by Nair et al.[8].

Conclusion

Thrombocytopenia, a common observation in clinical practice needs a systematic evaluation to find out the underlying secondary cause which can be infective or non infective. All cases of thrombocytopenia may not have a bleeding manifestation and maybe asymptomatic at initial presentation. However in few cases it may lead to severe bleeding which maybe life threatening for the patient. Infections like Dengue fever and Septicaemia were the common cause of thrombocytopenia along with Chronic liver disease.

Declarations

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Conflict of interest: NIL

Ethical approval: Taken

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