



Evaluation of Thrombocytopenia in a Tertiary Care Centre

KEYWORDS

Etiology, Idiopathic thrombocytopenic purpura, Platelet,

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ABSTRACT Background- Thrombocytopenia is one of the most common cause of abnormal bleeding .

Objective-To establish a pattern of differential diagnosis of thrombocytopenia

Material and method- 200 cases of thrombocytopenia reported on peripheral blood smear during 2 year period (October 2013- September 2015) were studied.

RESULT- 55 cases (27.5%) of thrombocytopenia were due to Idiopathic thrombocytopenic purpura. Infections (42 cases, 21%), hematological malignancies (21 cases, 10.5%), megaloblastic anemia (19 cases, 9.5%), aplastic anemia (16 cases, 8%), hypersplenism (12 cases, 6%), drugs (12 cases, 6%), Alcoholism (6 cases, 3%), immunologic disorders (3 cases, 1.5%), Paroxysmal nocturnal hemoglobinuria (3 cases, 1.5%), Valvular heart diseases (3 cases, 1.5%), Pregnancy (2 cases, 1%) and other disorders (3%) caused thrombocytopenia.

CONCLUSION- The incidence and causes of thrombocytopenia may vary, depending on age group, geography, health care setup where the study is conducted and method used for diagnosing thrombocytopenia .

INTRODUCTION

Thrombocytopenia may be due to diversity of disorders. According to George M. Rodgers (2009) it may result from four processes which are, deficient platelet production, artifactual thrombocytopenia, accelerated platelet destruction, and abnormal pooling of the platelets within the body.¹ The most common cause for thrombocytopenia may be accelerated platelet destruction. Harker LA (1968) states that it stimulates thrombopoiesis and leads to an increase in the size, number and rate of maturation of the precursor megakaryocytes.² The aim of the present study is to find out the various causes of thrombocytopenia.

MATERIALS AND METHOD

This is a study of 200 cases of thrombocytopenia reported on the peripheral blood smear during 2 years period, from October 2013 to September 2015 at Sree Narayana Institute of Medical Sciences, Chalaka, Kerala, India. 100 prospective cases and 100 retrospective cases were studied. Both sexes were included in the study and the age groups ranged from 1 day newborn to 78 years.

RESULTS

Out of the 200 cases studied 55 patients had idiopathic thrombocytopenic purpura. Of this 28 cases were children below 12 years and 27 cases were adults. 42 cases were due to infections. The most common infection was bacterial (21 cases) followed by viral (19 cases) and malaria (2 cases). Of the total 21 cases of hematological malignancies 9 cases were due to Acute Myeloid leukemia, 6 cases due to Acute Lymphocytic leukemia, 2 cases due to Myelodysplastic syndrome, 2 cases due to Malignant Lymphoma, 1 case due to Chronic Lymphocytic leukemia and 1 case due to Multiple myeloma. Megaloblastic anemia was the cause in 19 patients. Out of 16 cases of aplastic anemia 12 were due to unknown cause, 1 due to drugs, 1 due to hepatitis B infection and 1 due to Fanconi's anemia. Of the 12 cases of hypersplenism, 9 had congestive splenomegaly, 2 had thalassemia and 1 had tropical splenomegaly. 12

cases were due to drug induced thrombocytopenia .

A summary of results of the study is given below. (Table.1)

Table 1- Number of cases studied -200

CAUSES	NUMBER OF CASES	PERCENT-AGE
Idiopathic thrombocytopenic	55	27.5%
Infections	42	21%
Hematological malignancies	21	10.5%
Megaloblastic anemia	19	9.5%
Aplastic anemia	16	8%
Hypersplenism	12	6%
Drugs	12	6%
Alcoholism	6	3%
Immunologic disorders	3	1.5%
Paroxysmal nocturnal hemoglobinuria	3	1.5%
Valvular heart diseases	3	1.5%
Pregnancy	2	1%
Iron deficiency anemia	1	0.5%
Gaucher's disease	1	0.5%
DIC due to snake bite	1	0.5%
Artificial valve prosthesis	1	0.5%
Massive blood transfusion	1	0.5%
Rh incompatibility	1	0.5%

DISCUSSION

Thrombocytopenia is defined as a platelet count <150,000/microL. The etiology of thrombocytopenia

in each patient varies and depends mostly on the clinical presentation. Establishing the etiology of thrombocytopenia may sometimes be quite challenging especially in hospitalized patients with a background of multisystem disorders.

W.M. Fowler (1936)³ analyzed 160 cases of thrombocytopenia. Of this 17 cases (10.6%) were due to Idiopathic thrombocytopenic purpura and 143 (89.4%) were of secondary type. Hematologic malignancies were the commonest cause of thrombocytopenia in secondary variety, 53/143 (37%). The next common cause was infections 25/143 (17.5%). Pernicious anemia accounted for 14/143 (9.8%) and 11/143 cases (7.7%) were due to aplastic anemia. Thrombocytopenia due to drug intake was 6/143 (4.2%). The rare causes include hypochromic anemia, anemia of pregnancy and hemolytic anemia.

In a study conducted by Charles A. Doan, Bertha A. Bouroncle, Bruce K. Wiseman (1960)⁴ 381 cases of thrombocytopenia were analyzed. Of these 271 (71.1%) were diagnosed as primary and 110 (28.9%) as secondary thrombocytopenia. Of the 110 cases of secondary thrombocytopenia 57 cases (51.8%) were attributed to viral infection. Tuberculosis as a cause of thrombocytopenia was found in 11/110 (10%) cases. 14 cases were attributed to hematological malignancies (12.7%) and 5 cases (4.5%) due to Gaucher's disease. The other causes included sarcoidosis, SLE etc.

Table 2 gives a comparison of present study with previous two studies.

CAUSES	W.M. Fowler (160 cases)	Charles A. Doan et al (381 cases)	Present study (200 cases)
1. Idiopathic thrombocytopenic purpura	10.6%	71.1%	27.5%
2. Secondary thrombocytopenia	89.4%	28.9%	72.5%

Table 2- comparing the present study with other studies on etiology of thrombocytopenia

From the above table it is evident that in two studies, secondary causes outnumbered primary. (Idiopathic thrombocytopenic purpura) Of the secondary causes hematological malignancies 53/143 (37%) was followed by infections 25/143 (17.5%) according to study of W.M. Fowler³. Infections accounted for 61.8% of cases followed by hematological malignancies (12.7%) in studies done by Charles A. Doan et al.⁴ In the present study the most common cause for secondary thrombocytopenia was infections 42/145 (29%) followed by hematological malignancies 21/145 (14.5%).

Mehmet Ali Erkurt, İlhami Berber, İlknur Nizam, Emin Kaya, Mustafa Koroglu, İrfan Kuku and Omer Kalaylı (2014)⁵ evaluated 1012 patients with thrombocytopenia. Of the 1012 patients admitting to their clinic with thrombocytopenia, 16.8% had leukaemia and it was the most

frequent reason of thrombocytopenia. Infections with frequency of 16.1% were the second major cause. Thrombocytopenia was observed most frequently after viral infections. The third most frequent reason was immune thrombocytopenia with a frequency of 14.9%. The other reasons for thrombocytopenia were drugs, megaloblastic anemias, chronic liver diseases, pseudothrombocytopenia, thrombotic microangiopathies and other diseases.

From all the above studies we can infer that causes and incidence of thrombocytopenia can vary. According to studies done by Mehmet Ali Erkurt et al⁵ leukemia was the most frequent cause. This may be because their centre was one of the biggest tertiary centres in Eastern Anatolia and it was the complicated cases that were referred to them. The centre in which the study is conducted may influence the causes of thrombocytopenia.

Another observation in these studies was that Iron deficiency anemia also contributed to thrombocytopenia. The rate at which of Iron deficiency anemia caused thrombocytopenia being 0.7% according to studies done by W.M. Fowler³, 1.1% by Mehmet Ali Erkurt et al⁵, 0.7% by present study and none by Charles A. Doan et al⁴. Iron deficiency anemia is usually the cause of relative thrombocytosis. However there are some studies conducted by Kuku I, Kaya E, Yologlu S, Gokdeniz R, Baydin A (2009)⁶ and Berger M, Brass LF (1987)⁷ reporting that iron deficiency anemia may also cause thrombocytopenia.

This study differs from studies conducted by Mehmet Ali Erkurt et al⁵ with regard to the age group selected for study. Patients included into the study by Mehmet Ali Erkurt et al⁵ were 18 years or older at the time of diagnosis. In the present study a wider age group from 1 day newborn to 78 years was included in evaluation.

A fully automated hematology analyzer system using impedance method for thrombocyte count by Beckman Coulter LH 780 (Miami, FL, USA) was used for thrombocyte count in the studies done by Mehmet Ali Erkurt et al⁵. In their series, pseudothrombocytopenia rate was found to be 3%. In the present study only patients with thrombocytopenia reported on peripheral smears were included. Hence pseudothrombocytopenia was eliminated from the causes of thrombocytopenia.

CONCLUSION

The importance of careful differential diagnosis when faced by problem of thrombocytopenia is obvious. The causes may vary depending on geography, age group studied, health care setup where the study is conducted and the method used for assessing platelet count.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

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