

ETIOLOGICAL EVALUATION OF THROMBOCYTOPENIA IN A TERTIARY CARE HOSPITAL

NIGHAT RASHID, UMBREEN IMTIAZ, SHAISTA MOBEEN, IRUM IQBAL, AYESHA KHALID
Department of Pathology, PGMI/AMC/LGH, Lahore.

Correspondence to: Dr. Nighat Rashid, Associate Professor, PGMI/AMC/LGH, Lahore

ABSTRACT

Introduction: Thrombocytopenia (TCP) is not considered as a disease but a deficient number of platelets in the blood. It is considered to be a diagnostic challenge as the disorders which cause TCP are diverse, with failed production at one extreme and the accelerated destruction at the other. The result of this is that the differential diagnosis has a vast range.

Aims and Objective: To diagnose thrombocytopenia and investigate its causes in the Hematology laboratory of Lahore General Hospital Lahore, a tertiary care hospital.

Materials and Methods: A retrospective, cross sectional study was carried out on screened 388 patients with TCP, who came to the hematology department of Lahore general hospital, for bone marrow biopsy over a period of 7 years from January 2012 to December 2018. Patients with pseudo-thrombocytopenia were excluded and all these patients were investigated in a systemic manner.

Results: The most common affected age group of thrombocytopenia was from birth to second decade of life respectively with male predominance. The most common cause of thrombocytopenia was found to be anemia.

Conclusion: Thrombocytopenia is a major cause of abnormal bleeding in many cases. It is important to diagnose it early as the treatment differs depending upon the etiology. As TCP is multifactorial hence clinic-pathological approach is important in these cases.

Keywords: Thrombocytopenia (TCP), Platelets, Etiology, Multifactorial, Clinico-pathological.

INTRODUCTION

Platelets play an important role in hemostasis and are formed by fragmentation of megakaryocytes; they circulate in the blood for 7 to 10 days. Significant quantitative or qualitative platelet dysfunction results in mucocutaneous bleeding. With the widespread use of automated cell counters, it is not unusual to unexpectedly find patients with low platelet counts^{1,2}

TCP is not a disease entity but a finding that may result from a number of disease processes¹. It is defined as a platelet count below the normal range for the population. In most of the laboratories, a normal platelet count is between 150,000-450,000 x 10⁹/l⁶

There is no such definition as mild, moderate or severe TCP. The National Cancer Institute has developed the criteria to describe the severity of TCP. Platelet counts of 75,000 to less than 150,000 x 10⁹/l are defined as grade 1 thrombocytopenia, 50,000 to 75,000 x 10⁹/l as grade 2, 25,000 to 50,000 x 10⁹/l as grade 3, and below 25,000 x 10⁹/l as grade 4 thrombocytopenia^{6, 8}.

As thrombocytopenia has a broad differential diagnosis with failed production at one extreme and the accelerated destruction at the other, hence it presents with diagnostic and management challenges².

Presentation of these patients also varies, as some are without symptoms and others may present with minor to severe fatal bleeding³. The condition under which it has developed has an important influence on the occurrence of bleeding⁴. Besides history and proper examination, a number of tests are available to arrive at the etiology of thrombocytopenia. However one must use clinical judgment to choose between them³. Depending on the cause, the management of thrombocytopenia differs hence early and accurate diagnosis is very important. We undertook this study with the aim to evaluate the etiology of TCP. The objective of this study was to find out the etiology in patients who came to the hematology department for bone marrow biopsy. Cases of TCP were further analyzed and evaluated to find the underlying cause as TCP causes the greatest morbidity and mortality in platelet-associated disease

MATERIALS AND METHODS

A retrospective, cross sectional study was carried out on screened 388 patients with TCP who came to the hematology lab for bone marrow biopsy. All patients of proved thrombocytopenia patients were included in the study over a period of 7 years from January 2012 to December 2018. Pseudo-thrombocytopenia patients were excluded from the study. All these patients were investigated in a systemic manner, causes of TCP were ascertained and data was analyzed. Platelet counts were done by electronic cell counter SYSMEX KX-21 which was confirmed manually. Stained peripheral smear was screened for presence of platelet aggregates or platelet satellitism, as in their presence it is not possible to estimate the exact number of platelets.

RESULT AND OBSERVATIONS

The age range in our study was 1 day to 80 years. Most of the cases were seen between in 0-20 years of age i.e 216 (55.67%). The rest were 111(28.60%), 48(12.37%) and 13(3.35%) in 21-40, 41-60 and 61-80 years respectively. (Table 1)

A definite male preponderance was seen in almost all age groups with a frequency of 238 (61.34%) and females were 150 (38.65%). (Table 2)

In our study commonest cause contributing to thrombocytopenia was found to be anemia and was

estimated to be 154 (39.69%) followed by leukemia, aplastic anemia, ITP, hypersplenism and lymphoma as 104 (26.80%), 61 (15.7%), 45 (11.59%), 13 (3.35%) and 11 (2.83%) cases respectively (Table 3).

Table 1: Age incidence in patients with TC

SR.NO	AGE GROUP (in yrs)	n (%)
1	0-20	216(55.67)
2	21-40	111(28.60)
3	41-60	48(12.37)
4	61-80	13(3.35)

Table 2: Gender incidence in patients with TC

SR.NO.	GENDER	n(%)
1	Male	238(61.34)
2	Female	150(38.65)

Table 3: Etiological incidence in patients with TC

SR. NO.	CAUSE	n(%)
1	Anemia	154(39.69)
2	Leukemia	104(26.80)
3	Aplastic anemia	61(15.7)
4	ITP	45(11.59)
5	Hypersplenism	13(3.35)
6	Lymphoma	11(2.83)

Table 4: Comparison of major causes in different studies

STUDY	Anemia	Malignancy	Hypersplenism	ITP	AA
Baheti et al 2018 ¹⁰	42.67(%)	8.45(%)	17.99(%)	2.31(%)	-----
Das et al 2017 ⁹	47.5(%)	32.5(%)	-----	5(%)	2.5(%)
Sanjay et al 2017 ¹¹	21.6(%)	-----	3.3(%)	-----	2.5(%)
Bhalarat et al 2015 ⁷	1.9(%)	-----	12.3(%)	3.1(%)	0.48(%)
Ross et al 1991 ¹⁴	38.2(%)	-----	-----	-----	-----
Our study	39.69(%)	26.80(%)	3.35(%)	11.59(%)	15.7(%)

DISCUSSION

In the present study age group which had highest frequency of thrombocytopenia was 1st and 2nd decade of life, which was in consistent with the study done by Khairkavetal et al 2016¹³ and differed from the study by Sanjay et al 2017¹¹ who stated that TC was more prevalent in 3rd decade.

In the present study male population outnumbered female population. This may be due to the fact that it has been observed in some studies that prevalence, of major etiological factors, like anemia and splenomegaly have been found to be more in males than in females⁵. Although our finding was not in consistence with a study by Mural et al 2017¹² who found the frequency of TC to be more in females (64%) than males (36%).

In our study anemia was found to be the major cause of TCP in patients who came to our department for bone marrow biopsy and Leukemia ranked second next to anemia in the list. We came across the following comprehensive studies on thrombocytopenia as shown in the Table 4 where three studies had anemia as the most common cause and one did not. Regarding malignancy one was in consistence and considering ITP three were similar.

CONCLUSION

TCP is root cause of abnormal bleeding in most of the cases. Over the years of clinical practice, physicians accurately diagnosed the varied causes of thrombocytopenia with the help of pathologists.

Importance of early and prompt diagnosis of thrombocytopenia is always warranted as treatment differs depending upon the etiology. Thrombocytopenia is multifactorial and a finding that may result from various diseases. Hence the clinicopathological approach is important in thrombocytopenia cases.

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