Section: Pathology

Original Research Article

CLINICO-PATHOLOGICAL STUDY OF IDIOPATHIC THROMBOCYTOPENIC PURPURA OUR EXPERIENCE AT TERTIARY CARE HOSPITAL – 5YR STUDY

M. Mark Edward[1], Amreen Unissa[2], Sandhya Bangaru[3], Meghna Maria Tharakan[4], Harika Kalangi[5], Anunayi Jestadi[6]

[1]*Assistant Professor, Department of Pathology, Government Medical College, Suryapet, Telangana, India.*
[2]*Assistant Professor, Department of Pathology, Government Medical College, Suryapet, Telangana, India.*
[3]*Assistant Professor, Department of Pathology, Government Medical College, Suryapet, Telangana, India.*
[4]*Senior Resident, Department of Pathology, Government Medical College, Suryapet, Telangana, India.*
[5]*Resident fellow, Mount Sinai Hospital, New York, United States..*
6 Professor, H.O.D., Department of Pathology, Government Medical College, Suryapet, Telangana, India.

Received *: 28/12/2023*
Received in revised form *: 16/02/2024*
Accepted *: 01/03/2024*

Corresponding Author:
Dr. Sandhya Bangaru
Assistant Professor, Department of Pathology, Government Medical College, Suryapet, Telangana, India.
Email: bangaru86s@gmail.com.

DOI: 10.5530/ijmedph.2024.1.78

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2024; 14 (1); 426-428

ABSTRACT

Background: Immune thrombocytopenia is a condition with low platelet count with unknown etiology. It is mostly seen in pediatric age group and in elderly people. The aim of this study is to assess the clinic-pathological profile of patients with ITP presenting to this tertiary care hospital.

Materials and Methods: The above study was conducted over a period of 2 years in the Department of Pathology, Government Medical College and Hospital, Suryapet over 5 years, i.e., from March 2018 to February 2023. A total of 100 patients with ITP were included in the study.

Results: Males were more than females in present study. 0-20 years was the commonest age group presenting with ITP. Petechiae were the commonest presentation. The mean platelet volume (MPV) and platelet distribution width (PDW) were inversely proportional to the platelet count.

Conclusion: Most of the patients with ITP have a self-limited course and very few actually develop serious bleeding manifestations. There were no deaths or any serious bleeding manifestations reported in this study. Larger sample size is needed to study the clinical spectrum of the patients in present area.

Keywords: ITP; platelets, thrombocytopenia; Bone marrow aspiration; anti-platelet antibodies mean platelet volume, platelet distribution width.

INTRODUCTION

Idiopathic thrombocytopenic purpura (ITP) is the condition with low platelet count (thrombocytopenia) of unknown etiology (idiopathic), affecting the function of platelets rather than the number. Also known as immune thrombocytopenia purpura, this condition is related to production of antibodies against the platelets. Despite of the low platelet counts, most of the cases are asymptomatic, except when the platelet count is very low, patient complains of bleeding diathesis and purpura.

ITP is relatively rare with an estimated annual incidence of 3.3 per 100,000 adults and a prevalence of 9.5 per 100,000 adults in the United States. Annually, there are 50-100 new cases per million. Although it can occur at any age, children aged between 2-5 years account for half of the patients with ITP, followed by adults aged above 60 years.[1,2]

ITP affects both genders, but studies suggest a slight female predominance. In children, boys are more commonly affected than girls, while in adults; women are more commonly affected than men.

The etiology of ITP is unknown, but certain risk factors and triggers have been identified, which include viral infections (such as Epstein-Barr virus, cytomegalovirus, and hepatitis C virus), medications (such as heparin, quinine, and some antibiotics), autoimmune diseases, and pregnancy.[3]

The pathogenesis of ITP involves an autoimmune process wherein antibodies (IgG) are directed against platelet membrane glycoproteins IIb-IIIa or Ib-IX. The coating of platelets with IgG makes them

susceptible to opsonization and phagocytosis by splenic macrophages.[4]

Bleeding time is usually prolonged; however, the American Society of Hematology doesn't count prolongation of bleeding time in the diagnostic criteria. The presence of antiplatelet antibodies in the patient's blood is said to be confirmatory.[5-7]

A detailed clinical history is required along with physical examination, complete blood picture and peripheral blood smear examination. Bone marrow studies are needed in patients with atypical features or in patients with indication of splenectomy.[8,9]

ITP is a diagnosis of exclusion. Other causes of Thrombocytopenia such as Leukemia, myelophthisic marrow infiltration, myelodysplasia, aplastic anemia or adverse drug reactions should be excluded before coming to a diagnosis of ITP.

This study was conducted to provide the overall demographic profile, clinical features, diagnostic criteria and outcomes of patients with ITP.

MATERIAL AND METHODS

This study was conducted in the department of pathology, Government Medical College and Hospital, Suryapet over 5 years, i.e., from March 2018 to February 2023. Blood samples were collected from Departments of Medicine, Pediatrics, MICU, and PICU.

Clinical history was collected from medical files of patients. A thorough physical examination was done to rule out other causes of thrombocytopenia.

Hematological investigations were done. Blood was collected using standard phlebotomy procedures and processed in automated Hematology cell counter. Platelet count, Mean platelet volume (MPV) and platelet distribution width (PDW) were collected.

All patients, irrespective of age, with platelet count <50 x 10 per ml, in the absence of any WBC abnormalities, who didn't receive any steroid or immunosuppressant therapy in the recent past were included.

Patients with platelet count >50 x 10 ml, or with secondary causes of thrombocytopenia such as pregnancy, cirrhosis, HIV, SLE or viral hemorrhagic fevers were excluded from the study.

RESULTS

A total of 100 patients with ITP were diagnosed out of all the blood samples tested. Out of these 100 cases, 33 cases (33%) were in the age range of 0-20 years, 48 cases (48%) in the 21-40 years and 19 cases (19%) in 41-60 years. 68% of the study population were males and the rest 32% were females. The male: female ratio was 2:1.

Petechiae were the most commonly presenting clinical feature (36%), followed by ecchymosis (18%), epistaxis (15%), hematuria (12%), melena (9%) and menorrhagia (9%). No major hemorrhagic features like intracranial bleeding or hemopericardium were seen.

35% had a platelet count of < 25,000 and 65% had a count between 25,000 and 50,000. Majority of children had a count of less than 20,000. Platelet count did not correlate with the type or severity of bleeding.

A Mean Platelet Volume (MPV) value of 11-14 fL was seen in 78% and of 15-18 fL in 22% of the study population. MPV upto 15 f L was seen in patients having a platelet count of more than 25,000 (majority adults) and a higher value upto 18 fL was noted for a count less than 25,000 (mainly children). MPV correlated well with degree of thrombocytopenia.

Platelet Distribution Width (PDW) of 15-17 fL was seen in 75% and of 18- 20 fL in 25%. The correlation between PDW and platelet count was significant as observed by higher values for platelet count of less than 25,000 and vice-versa, suggestive of inverse relationship between the two.

Table 1: MPV distribution in children and adults

Authors	MPV in children	MPV in adults
Tomita et al [14]	10-13fL	14-18 fL
Ntaios et al[15]	11-13fL	15-17fL
Jayabose et al[16]	10.5-12.5fL	14-17fL
Present study	11-14fL	15-18fL

Table 2: Platelet Distribution Width (PDW) in adults

Authors	PDW
Tomita et al,[14]	14-16fL
Ntaios et al,[15]	15-18fL
McMillan et al,[17]	14.5-16.5fL
Present study	15-17fL

PDW in adults was in the range of 15-17fL and was inversely proportional to the platelet counts. Other studies have showed similar results.

DISCUSSION

In present study, 100 patients with ITP were included. The most common age group (33%) was in 0-20 years. Kuhn et al,[10] and Thiagarajan et al,[11] had observed that most of their study population was of pediatric age group, with highest incidence in 2-6 years of age.

Male: female ratio in present study was 2:1, with males constituting 68% of the study sample, while females were 32%. This is concordance with the study done by Thiagarajan et al.[11] However, in the study

conducted by Kuhn et al,[10] both males and females are equally affected.

The most common presentation of ITP in present study was petechiae (36%), followed by ecchymosis (18%). This is low when compared to studies by Thiagarajan et al,[11] Choi et al,[12] and Bolton Maggs et al,[13] in which 86.6% had petechiae and 46.6% had ecchymosis.

Unlike study done Thiagarajan et al,[11] where one patient had died by bleeding manifestations, no deaths were reported in present study.

In the present study Mean Platelet Volume (MPV) in children was between 15-18 fL and in adults it was between 11-14 fL. The MPV was inversely proportional to the platelet count, which is similar to other studies.

CONCLUSION

The diagnosis of ITP is done after excluding all the other causes of thrombocytopenia. The hallmark of ITP is isolated thrombocytopenia and presence of anemia or neutropenia should suggest other disease as the cause for thrombocytopenia. The Mean Platelet Volume (MPV) and Platelet Distribution Width (PDW) is elevated in all the cases of ITP and correlated significantly with severity of thrombocytopenia.

Acknowledgments: the authors would like to thank the entire faculty of Department of Pathology for providing with all the facilities to conduct this study

Conflicts of Interest: Nil.

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