

THROMBOCYTOPENIA IN CHILDREN

Mohammed Ali Jan

*Department of Pediatrics,
Hayat Shaheed Teaching Hospital,
Peshawar*

ABSTRACT

Objective: To find out the etiology, clinical profile and complications of thrombocytopenia in children.

Material and Methods: This study was conducted at Hayat Shaheed Teaching Hospital, Peshawar from June 1995 to December 1996. Patients upto 12 years of age, presenting with mucocutaneous bleeding or thrombocytopenia on peripheral smear were included in the study. Detailed history and physical examination was followed by relevant investigations. Patients with complications and platelet count $< 30 \times 10^9/L$ were given steroids.

Results: Acute immune thrombocytopenia (ITP) (32%), aplastic anemia (24%), Acute lymphoblastic leukemia (22%), lymphoma (4%), hemolytic uremic syndrome (4%), megakaryocytic hypoplasia (3%), drug induced thrombocytopenia (3%), hypersplenism (3%), neonatal thrombocytopenia (2%), plasmodium falciparum malaria (2%) and leishmaniasis (1%) were identified the main causes of thrombocytopenia in children. Petechiae, ecchymosis, epistaxis, gingival bleedings, haematuria, melena and bleeding per vagina were the presenting symptoms in decreasing order of occurrence. Subconjunctival hemorrhages, hemorrhagic bullae and retinal hemorrhages were the main complications. Intracranial bleeding, the most serious complication, was not seen in this study. Bleeding time, peripheral blood smear and bone marrow examination was performed in all patients. Of the 32 patients with acute ITP 24(75%) patients fulfilled the criteria for no therapy regimen and the rest of the 8(25%) patients were put on steroids.

Conclusion: Acute ITP is the leading cause of thrombocytopenia in children. Use of steroid should be recommended in proper dosage where indicated.

Key words: Thrombocytopenia, ITP, Steroids.

INTRODUCTION

Platelet count below the lower normal limit of $150 \times 10^9/L$ is called thrombocytopenia in children. It is the most common cause of bleeding in children.¹ Affected children may experience petechiae, epistaxis, gum bleedings, hematuria or gastrointestinal hemorrhage. In patients with entirely normal physical examination other than mucocutaneous bleedings the diagnosis of acute ITP is made. If the patients show hepatosplenomegaly, lymphadenopathy or skeletal anomalies, other acquired or congenital disorders that could lead to thrombocytopenia must be ruled out.²

Immune thrombocytopenia is a relatively common disease that occurs in both children and adult population. It may be acute ITP in which the platelet counts return to normal within six months.³ This type is more common in children than the chronic form in which platelet count remain below normal six months after diagnosis. This variety is commonly seen in adults.⁴

Acute ITP is commonly seen in children 2 to 6 years old. It is very rare below one year. Till the age of 12 years there is no sex difference. Thereafter females outnumber males. Peak incidence occurs during winter and fall, coinciding the peak prevalence of respiratory tract infections. History of upper respiratory tract infection can be elicited in more than 50 percent of the patients.⁵

The onset of symptoms in acute ITP is abrupt. Manifestation are less marked even when thrombocytopenia is severe.⁶ The risk of bleeding is more at the initial stages when the platelet count is less than $20 \times 10^9/L$.⁷ Skin is the most common site of manifestations showing petechiae and ecchymosis. Large haematomas may form in subcutaneous tissue.¹ Epistaxis and gingival bleeds are common presenting symptoms like haematuria and melena. Patients may show big bullae in

mouth and retinal hemorrhages. The most dreadful complication of intracranial hemorrhage occurs in less than 1% of the patients with acute ITP and is restricted to patients with platelet count less than $20 \times 10^9/L$.⁸

Full blood count, bleeding time and peripheral smear is done in all the cases to diagnose acute ITP. It is not necessary to perform bone marrow examination in every case having no unusual sign.⁹ It must be done if the history is atypical, abnormalities other than purpura and ecchymosis are present or other cell lines are affected to rule out secondary causes of thrombocytopenia, or if steroids are to be administered.¹⁰

This study was done to know the etiology of thrombocytopenia, its clinical profile, complications, investigations required to diagnose acute ITP and its best treatment in our circumstances.

MATERIAL AND METHODS

This study was done on 100 pediatric patients at the department of pediatrics and child health Hayat Shaheed Teaching Hospital, Peshawar. All patients came from various parts of NWFP including Afghan refugees. They were selected for the study according to the following inclusion and exclusion criteria.

Inclusion Criteria

1. Neonates to twelve years of age.
2. All patients with mucocutaneous bleedings or low platelet count on peripheral smear examination.

Exclusion criteria

1. All patients above twelve years of age.
2. Patients with purpuric rash typical of Henoch-Schonlein purpura.
3. Patients with abnormal coagulation profile.

4. Patients with platelet function defects (prolonged bleeding time with normal platelet count).

All the patients were admitted at their first visit. A detail history was taken with special emphasis on age of presentation, duration of illness, history of sore throat or any febrile illness in the past 1-3 weeks and drug history.

In case of neonates any history of purpuric rash in the mother was specifically asked. Past and family history of similar illness were taken.

A methodical clinical examination was performed to know the site and severity of bleeding. Hepatosplenomegaly, lymphadenopathy, anemia and bone tenderness was specifically looked for, to exclude secondary causes of thrombocytopenia. Patients were thoroughly examined for any complication of thrombocytopenia.

Hemoglobin, total and differential leukocyte count, peripheral blood smear, reticulocyte counts, bleeding time and coagulation profile was taken. Deciding on the results or as advised by the hematologist bone marrow and trephine biopsy was performed to exclude secondary causes of thrombocytopenia.

Based on the clinical examination and laboratory reports patients were divided into two groups for the purpose of treatment. Patients without complications and platelet counts above $30 \times 10^9/L$ were put on no therapy regimen and those with complications and platelet counts of $30 \times 10^9/L$ or below were given steroids (Prednisolone 1mg/Kg/day for three weeks).

RESULTS

Of the total 100 cases of thrombocytopenia 65(65%) patients are Pakistani and 35(35%) are Afghan Refugees. All the

Pakistani patients came from various parts of NWFP. Out of 100 patients 32(32%) proved to be acute Immune thrombocytopenia, 24(24%) aplastic anemia, 22(22%) acute lymphoblastic leukemia, 4(4%) lymphoma, 4(4%) hemolytic uremic syndrome, 3(3%) megakaryocytic Hypoplasia, 3(3%) Drug induced thrombocytopenia, 3(3%) hypersplenism, 2(2%) neonatal thrombocytopenia, 2(2%) plasmodium falciparum malaria, and 1(1%) patient of leishmaniasis.

Of the total 32 patients with acute ITP, 21(66%) are male and 11(34%) are female. Sixteen (50%) patients are between 1 and five years old, 11(34%) patients between five and ten years and 5(16%) patients between ten and twelve years. Twenty (63%) patients presented in winter and 12(37%) in summer. History of sore throat is positive in 13(41%) patients in winter and 5(16%) patients in summer.

All patients initially presented with petechiae and ecchymosis, 11(34%) patients came with mild to moderate epistaxis, 9(28%) with gingival bleeding, 3(9%) with haematuria, 2(6%) with melaena and one girl came with bleeding per vagina. Of the 32 patients with Acute ITP 4(12%) patients were found to have subconjunctival hemorrhages, 3(9%) patients had hemorrhagic bullae in mouth with profuse bleeding, 2(6%) patients were found to have bilateral retinal hemorrhages on fundoscopy. No patient was found to have intracranial bleed.

Investigations showed hemoglobin between 8 and 12 mg%. Total and differential leukocyte counts were in the normal range in all patients with acute ITP. Bleeding time was prolonged in 100% of the cases. Peripheral smear showed platelet counts between $10 \times 10^9/L$ and $30 \times 10^9/L$ in 8(25%) and between $30 \times 10^9/L$ and $100 \times 10^9/L$ in 24(75%) of the patients. Bone marrow examination was done in all the cases. Hundred percent of the bone marrow examination showed megakaryocytic hyper-

plasia confirming peripheral destruction of the platelets.

Of the 32 patients with acute ITP 24(75%) were put on expectant therapy while 8(25%) patients were started on steroids. As the immunoglobulins and RhoGam are very expensive therapies of Acute ITP, these modalities of treatments were not included in this study.

DISCUSSION

Acute immune thrombocytopenia is one of the most common hematological disease among children.¹¹ It is the most common variety of thrombocytopenic purpura.¹² This is also evident from our study, as out of 100 patients with thrombocytopenia 32(32%) patients fulfilled the criteria of acute ITP.

In developed countries the incidence of ITP is equal in males and females.⁹ In our study there is a predominance of males with M: F ratio of 1.9:1. This is comparable to ratio of 1.8:1 reported by Shahanaz I et al,¹² 1995 from Lahore. The male predominance could be due to socio-cultural reasons. Fifty percent of the cases were documented in the age range of 1-5 years. This is comparable to reports of Hann IM,⁹ 1992 with age range 2-5 years. Shahanaz I et al, 1995 reported age range of 4-7 years.

Twenty (62%) patients presented in winter and fall, with history of some infection (Sore throat or acute lower respiratory infection) in the preceding three weeks in 18(56%) patients. Khalifa AS et al,⁵ 1993 reported 66% of patients with Acute ITP in winter and fall with a positive history of some viral infection in 50% of the cases. Yamamota T et al, 1993 reported positive history of infection in 69% of the patients with ITP. The large number of cases in winter and fall may be due to the increasing incidence of viral infections during these months.

All of our patients initially presented with petechiae and ecchymosis. Hundred percent of the same initial presentation has been reported by Shahanaz I et al,¹² 1995. Eleven (34%) patients had mild to moderate epistaxis, 9(28%) had gumbleeds, 3(9%) had hematuria and two(6%) patients presented with bleeding per rectum. Shahanaz I et al, 1995 reported epistaxis in 33%, gum bleeds in 25%, hematuria in 5% and bleeding per rectum in 33%. Three (9%) patients were found to have hemorrhagic bullae in the oral mucosa and gums, 4(12%) were documented with subconjunctival hemorrhages and 2 (6%) patients showed retinal hemorrhages on fundoscopic examination. Shahanaz I et al,¹² 1995 reported 3.3% of patients with subconjunctival hemorrhages. The reported incidence of intracranial bleeding in patients with Acute ITP is less than one percent.¹⁰ We could not document any patient with intracranial bleed in our study, which is comparable to the two studies done by Buhanan. He managed 715 patients with ITP with out a single episode of serious hemorrhage. As the number of patients in our study is small, this may be the reason that we could not find this complication in our study.

Hemoglobin was less than 10gm% in 12(38%) patients with acute ITP. This was hypochromic microcytic type of anemia which was also reported by Frank F et al,¹⁴ 1989. Almost 100% of the patients showed prolonged bleeding time favoring the study done by Miale John B,¹⁵ 1982.

Bone marrow examination of 34 patients, with suspected Acute ITP on clinical grounds, confirmed the diagnosis in 32(94%) patients, while 2(6%) patients were diagnosed to have Aplastic anemia rather than Acute ITP. Study of Bone marrow aspiration of 132 patients with clinical suspicion of Acute ITP at the Toronto Hospital for Sick children, between 1984 and 1987, showed 8 (6%) patients to have diagnosis other than

Acute ITP. Reid MM,¹⁶ 1992 also reported 2 patients of presumed ITP to have Aplastic and Fanconi, s anemia on bone marrow and review of clinical examination.

Twenty-four (75%) patients with platelet counts above $30 \times 10^9/L$ were put on conservative treatment including avoiding trauma, intramuscular injections, drugs like aspirin, which disturb the platelet functions, and vigorous treatment of cough and constipation, to avoid sudden increase in intracranial pressure. Twenty-two (91%) patients showed favorable response in six weeks while 2(8%) patients deteriorated and were put on steroids. Aumann V et al,¹⁷ 1993 reported the same response in eleven patients with Acute ITP on conservative treatment. Total 10(31%) patients of Acute ITP with platelet counts below $30 \times 10^9/L$ were put on Prednisolone 1-2 mg /Kg/day for three weeks or until the platelet count was normal whichever came first. Ninety percent showed response with in sixty days. Benyehuda D et al,¹⁸ 1994 reported 92% response of 712 patients with ITP to prednisolone in Israel.

CONCLUSION

Acute ITP is the leading cause of thrombocytopenia in children. This study was done to reassure the parents regarding its alarming presentation and benign nature and to inform the medical personnel handling these cases, as it may be over investigated and over treated. Once the patients are diagnosed as Acute ITP, there is no justification for keeping the patient in hospital, as the risk of intracranial bleed is as small at home as at hospital.

Doctors may treat these cases with steroids, due to its low cost, quickly platelet rising activity or parental anxiety, without proper indication. As this is a benign disease and in most of the studies patients have been managed as out patients without any therapy with regular follow up, without a

single episode of hemorrhage. It is suggested to avoid the unnecessary use of steroids in terms of its proper indications, dosages and duration as these drugs have untoward effects, more dangerous than the disease itself.

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Address for Correspondence:

Dr. Ali Jan,
 Department of Pediatric,
 Saidu Teaching Hospital,
 Swat.