Evaluation of Childhood Immune Thrombocytopenic Purpura Cases: 184 Case Experience of a Single Center

Mine KIRAÇ[1], Hüseyin TOKGÖZ[2], Ümran ÇALIŞKAN[3]

[1]Dr. Ali Kemal Belviranlı Kadın Doğum ve Çocuk Hastalıkları Hastanesi, Pediatrik immunology and allergy, Konya

[2]Necmettin erbakan university Meram Medical Faculty Pediatric Hematology, Konya

[3]KTO Karatay University Medical Faculty Pediatric Hematology,

Abstract

Purpose:

Immune thrombocytopenic purpura is the most frequently seen acquired bleeding disorder of childhood. It generally progresses with good prognosis and high spontaneous remission rate. Our study aims to evaluate the general characteristics of the patients followed at our clinic.

Material and Method:

Patients, who were diagnosed between 2000 and 2008 and whose follow-up periods exceeded six months at NEU Meram Medical Faculty Pediatric Hematology Department, were evaluated in this study.

Findings:

A total of 184 cases were taken under evaluation in this study. The male and female ratio was 1 (M/F: 1), and the age group in this patients were most frequently seen 1 to 10. The history of infection in acute ITP group was 49% and chronic ITP group was 17.9%. The most frequently observed history was the upper respiratory tract infection (67%). No difference was discovered among groups in terms of the distribution of symptoms. Application age and number of thrombocytes was significantly low in the acute group. The number of thrombocytes at the time of application of 63% of the patients with acute ITP was <10.000/mm3. The number of serologically proven infections was 30 (16.3%), with the most frequently encountered being EBV positive. The rate of becoming chronic in patients applying with acute ITP was 36.4%. Even though the number of acute cases was higher in the Infantile ITP group, there was no difference in terms of gender distribution.

Result:

It is possible to exclude history, examination, and laboratory as well as other causes of thrombocytopenia in patients applying with the ITP clinic. Morbidity and mortality due to ITP will have been prevented with the preference of effective and economic treatment methods. Prospectively planned comprehensive case studies are needed in order to determine the risk factors that might cause this disorder to reach a chronic state.

Key words: *Childhood, thrombocytopenia,*

Introduction And Purpose

Idiopathic thrombocytopenic purpura thrombocytopenia is characterized by shortened thrombocyte life, existence of anti-thrombocyte antibodies in the plasma, and existence of increased or normal number of megakaryocyte in the bone marrow. Mucocutaneous bleeding is the most frequently encountered symptom. The rate of life-threatening bleeding is quite low (0.2-0.9%), however, it may be fatal if it emerges in vital organs (1, 2). ITP in childhood is generally a benign condition that progresses with moderate symptoms, 80% of the cases enters spontaneous remission without treatment within six months (3).

It is classified as acute ITP if the number of thrombocytes becomes normal and the condition does not recur within six months following diagnosis and as chronic ITP if it remains below 150.000/mm^3 for a period longer than six months. While chronic form is prevalent in adults, acute form is more frequently seen in children (4).

Since the disease is most frequently temporary, its real incidence is not known. Its estimated incidence is 1/10,000 child in a year. Such incidence depends on the age and gender. The incidence is high below the age of two in boys and after the age of fourteen in girls (5). Symptoms may develop following infection and vaccination (6).

Acute ITP is generally seen among children between the ages of 1 to 9 and the peak incidence is around the ages of 2 to 5, during which infectious diseases are frequently observed. It is seen at equal rates in both genders (7).

The aim of this study was to perform the retrospective evaluation of the pediatric patients with ITP, who were diagnosed and being followed at the Pediatric Hematology Clinic of the NEU Meram Medial Faculty, to identify demographic findings, to determine and compare the characteristics of patients with acute and chronic ITP, and to research into the risk factors that might cause this disorder to reach a chronic state.

MATERIAL AND METHOD

Files of 184 patients, who applied to the Pediatric Hematology Clinic of the NEU Meram Medical Faculty and were diagnosed with ITP between 2000 and 2008 and whose follow-up periods were at least six months, were evaluated on a retrospective basis in this study. All patients were subjected to a complete blood count, a peripheral smear evaluation, a direct Coombs' test, kidney and liver function tests, a PT, an APTT, and a fibrinogen evaluation at the time of application and bone marrow evaluations of all patients except two, the consents of whose families could not be obtained, were realized.

Genders, ages, application times of the patients covered within the scope of the study as well as durations of their complaints, their application seasons, complaints for which they applied to the hospital (mucosal bleeding, dermatological signs, intracranial bleeding, other), their infections or histories of vaccinations, application thrombocyte values, viral serologies, progressions (acute, chronic), prognoses were evaluated. Patients with their thrombocyte numbers being <150,000/mm^3 for at least six months from the beginning of the disorder, were considered as having chronic ITP.

While the data obtained during the study were being evaluated, Excel 2000 and SPSS 12.0 programs were used for statistical analysis. The value $p< 0.05$ was considered to be significant. Parameters were expressed in average values, ± standard deviations, and percentages. The chi-square test was used in evaluating categorical data. In evaluating continuous variables, on the other hand, the t-test was used for normally distributing groups and the Mann Whitney U test was used for those not normally distributing.

FINDINGS

From the 184 patients covered within the scope of the study, 92 were girls (50%) and 92 were boys (50%). 67 (36.4%) of the patients were described to be with chronic ITP and 117 (63.6%) of them answered to the description of acute ITP. The ratio of girls was higher in cases with chronic ITP but no statistical difference was discovered ($p>0.05$). The average age was found to be 7 ± 4.47 year (3 month – 17 year). The average age of the chronic group was significantly higher compared to that of the acute group ($p<0.05$). When the distribution of patients was evaluated according to their age group, 134 (72.9%) of the cases were between 1 and 10 years of age. There were 10 (5.4%) cases below the age of one (between 3 months and 12 months). 40 (21.7%) of the cases were between the ages of 11 and 17. The number of infantile cases, that is, those below the age of two, was 24 (13%) (Table 1).

The most frequently encountered application symptom was dermatological signs (petechia, purpura) in both acute and chronic ITP groups. There was no statistically significant difference between the patients with acute and chronic ITP in terms of the distribution of their application symptoms (Table 1).

There was a history of infection suffered from at the time of the diagnosis in 60 (51.2%) of the 117 cases with acute ITP, 10 (18%) of the 67 cases with chronic ITP and 70 (39.1%) patients in total. The history of infection was significantly higher in the patient group with acute ITP (p=0.001). Vaccination history existed in a total of nine (5%) children being one in the group with chronic ITP and eight in the group with acute ITP. Since the number was low, a statistically significant difference could not be found between the two groups in terms of the vaccination history (Table 1).

The application thrombocyte numbers of the acute group was determined to be lower and this difference was found to be statistically significant (p=0,004) (Table 1) .

When the patients at the age of twenty four months and younger, that is, infantile patients with ITP were compared with older patients, the number of acute cases was higher (p=0.001), there was no difference in terms of gender distribution (p=0.43), there was no difference in the history of infections suffered from, and clinical symptoms starting with fever were significantly higher (p=0.007) (Table 2).

DISCUSSION

Idiopathic thrombocytopenic purpura is a hematological table characterized by the destruction of thrombocytes in the reticuloendothelial system by the autoantibodies that develop against thrombocytes and it is the most frequently encountered acquired bleeding disorder of childhood.

The rate of becoming chronic was found to be 36.4% in our study. The rate of becoming chronic in children was reported to range between 10 to 20% in the literature (1, 3, 4, 6, 7, 8). The reason for finding the rate of becoming chronic higher in our study may result from the fact that acute cases may enter spontaneous remission, thus causing the rate of application to hospital to be lower.

2/3 of cases with acute ITP are triggered with infection or vaccination (3, 9). Infection history was determined to be 60/117 (51%) in cases with acute ITP and 12/67 (18%) in those with chronic ITP. The existence of increased infection history in patients with acute ITP suggests that triggering by infection might be one of the indicators of remission.

Clinical characteristics in patients younger than two years of age ((infantile ITP) have been reported to be; increased boy/girl rate, lower rate of infection history prior to ITP, lower rate of chronic ITP, poor response to treatment, and severer clinical course (4, 10-11). In our cases, acute ITP was observed more frequently in patients below the age of two (p=0.0019), there was no difference in terms of gender distribution, infection symptoms in diagnosis were more frequent in terms of infection history (p=0.007), and there was no difference in terms of history of infections suffered from. Vaccination history was also found to be higher in this group due to the concentration of the routine vaccination schedule during the first two years.

Early remission indicators have been reported to be acute outset, triggering with infection, male gender, being below the age of 10, wet purpura, and the number of thrombocytes being below 5,000/mm^3 in the literature (12). It was also found in our study, as consistent with the literature, that the average age of application was lower in acute ITP, the rate of becoming chronic was higher in girls, the application thrombocyte number was below 10,000/mm^3 in 63.2% of the cases among children with acute ITP, and triggering by infection was significantly higher in the group with acute ITP. However, no association could be found between the symptoms and the disorder becoming chronic (13).

It is possible to exclude history, examination, and laboratory as well as other causes of thrombocytopenia in patients applying with the ITP clinic. Morbidity and mortality due to ITP will have been prevented with the preference of effective and economic treatment methods.

Prospectively planned comprehensive case studies are needed in order to determine the risk factors that might cause this disorder to reach a chronic state.

References

1. *Diane J. Nugent immune thrombocytopenic purpura of childhood American Society of Hematology 2006; 97-102*
2. *Lilleyman JS. Intracranial haemorrhage in idiopathic thrombocytopenic purpura. Arch Dis Child 1994; 71: 251-3*
3. *Blanchette, Bolton-Maggs. Chilhood Immune Thrombocytopenic Purpura: Diagnosis and Management, Pediatr Clin N Am 2008; 55:393-420*
4. *Lanzkowsky P. Disorders of Platelets. Manual of Pediatric Hematology and Oncology, Fourth Edition. Elsevier Inc, 2005;250-63.*
5. *Sutor AH, Harms A, Kaufmehl K. Acute immune thrombocytopenia in chilhood, retrospective and prospective survey in Germany. Semin thromb Hemost 2001; 27:253-7*
6. *Lileyman J S. Management of childhood idiopatic thrombocytopenic purpura. Br J Haematol 1999; 105:871-5*
7. *D.J Nugent Childdhood immune thrombocytopenic purpura Blood rewievs 2002; 16:27-9*
8. *Nathan DG, Oski FA Haematology of Infancy and Childhood, Acquired Platelet Defects. Sixth Edition. Saunders Company, Philadelphia, 2003;1597-1609*
9. *Black C, Kaye JA, Jick H. MMR vaccine and idiopathic thrombocytopenic purpura. Br J Clin Pharmacol 2003;55:107-11.*
10. *Scott J. Paul, Montgomery R.R. Hemorrhagic and thrombotic diseases In: Kliegman RM, Behrman RE, Jenson HB, Stanton, Nelson Essentials of Pediatrics 18th edition, Saunders Company 2007:2066-89*
11. *Kühne T, Imbach P, Buchanan GR, Zimmerman S. A prospective comparative study of 2540 infants and children with newly diagnosed idiopathic thrombocytopenic purpura (ITP) from the Intercontinental Childhood ITP Study Group. J Pediatr 2003;143:605-8.*
12. *Edslev PW, Rosthoj S, Treutiger I. A clinical score predicting a brief and uneventful course of newly diagnosed idiopathic thrombocytopenic purpura in children. Br J Haematol 2007;138:513-6.*
13. *Akbayram S, Dogan M, Ustyol L, Akgun C, Peker E, Bilici S et all. The Clinical Outcome of 260 Pediatric ITP Patients in One Center Clinical and Applied Thrombosis/Hemostasis 2011;17(6): E30-E35.*

Table 1. General characteristics of the diseases

		acute	chronic	P
Gender	Girls	54 (46.2%)	38(56.7%)	>0.05
	Boys	63(53.8%)	29(43.3%)	>0.05
Age				
	Average age (months)	71.3(±54.6)	104.8(±44.7)	0.001
Symptom				
	Epistaxis	13(11%)	11(16.4%)	>0.05
	Gingival bleeding	5(4.3%)	2(3%)	>0.05
	Petechia purpura	74(64.2%)	29(43.3%)	>0.05
	Mucosal + dermatological bleeding	18(15.4%)	15(22.3%)	>0.05
	İntracranial bleeding	1(0.9%)	1(1.5%)	>0.05
	Asymptomatic	2(1.8%)	6(9%)	>0.05
	Other	4(3.4%)	1(1.5%)	>0.05
History of infections suffered from		60(51.2%)	10(18%)	0.001
Vaccination		8	1	
Number of platelets ($x10^9$/lt)		14.6(±20.5)	26(±28)	0.004
	<10	74 (63.2%)	24(35.8%)	**0.001**
	10-19	19 (26.2%)	15(22.4%)	>0.05
	20-49	15 (12.8%)	15 (22.4%)	>0.05
	50-99	7 (6%)	11 (16.4%)	>0.05
	100-149	2(1.7%)	2 (3%)	>0.05
Viral serology		20	9	<0.05
	CMV	6	2	
	EBV	7	5	
	Rubella	6	0	
	Parvovirus	1	2	

Table 2. Comparison of the infantile group with other patients.

Characteristics	**≤ 24 months (N:34)**	**> 24 months (N:150)**	**P**
Acute	31(91%)	87 (58%)	**<0.05**
Chronic	3 (9%)	63 (42%)	**<0.05**
Infection(+)	14 (41%)	45 (30%)	>0.05
Infection(-)	14 (41%)	96 (64%)	>0.05
Girls/boys	16/18	76/74	>0.05
Infection at diagnosis	6 (18%)	7 (6%)	**<0.05**