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Clinical Outcome and Its Predictors in Children with Newly Diagnosed Immune Thrombocytopenia: Analysis of 25 Cases

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ABSTRACT

Background: Immune thrombocytopenia (ITP) is the most common cause of isolated thrombocytopenia in children, characterized by immune-mediated platelet destruction. The clinical course is variable, ranging from spontaneous remission to chronic disease. **Objective:** To assess the clinical outcomes and predictors of chronicity in children with newly diagnosed ITP. **Methods:** This prospective observational study included 25 children (mean age 4.5 ± 2.9 years) with newly diagnosed ITP. Demographic data, clinical presentation, baseline platelet counts, treatment modalities, and follow-up outcomes were recorded. Patients were followed for 12 months and classified as transient (complete remission within 12 months) or persistent/chronic ITP. Statistical analysis was performed to identify predictors of chronicity. **Results:** Of 25 children, 15 (60%) were male and 10 (40%) female. The mean baseline platelet count was 18,000/µL. Petechiae/purpura were the most common presentation (80%), followed by mucosal bleeding (20%). Twenty-one patients (84%) received treatment (Intravenous methylprednisolone), and four (16%) were managed conservatively. At 12 months, 20 children (80%) achieved complete remission, while five (20%) developed persistent/chronic ITP. Predictors of chronicity included age > 10 years ($p = 0.04$), female sex ($p = 0.03$), and higher platelet count at presentation (>30,000/µL) ($p = 0.05$). **Conclusion:** Most children with ITP have a benign, self-limited course. Older age, female gender, and higher baseline platelet count were significant predictors of chronicity. Early recognition of these predictors may guide risk stratification and follow-up planning.

Keywords: Immune Thrombocytopenia, Children, Clinical Outcome, Predictors, Chronic ITP.

INTRODUCTION

Immune thrombocytopenia (ITP) is an acquired autoimmune disorder characterized by isolated thrombocytopenia resulting from immune-mediated platelet destruction and impaired platelet production [1]. It is the most common cause of thrombocytopenia in otherwise healthy children, with an annual incidence of 2–5 per 100,000 [2]. The disease often presents abruptly, frequently following a viral infection, and manifests as petechiae, purpura, easy bruising, or mucosal bleeding. In rare instances, severe hemorrhagic complications, including intracranial bleeding, may occur, though these are uncommon in pediatric populations [3]. The pathophysiology of ITP involves autoantibodies targeting platelet surface glycoproteins, such as GPIIb/IIIa and GPIb/IX, leading to their premature destruction in the reticuloendothelial system, primarily the spleen. Additionally, impaired platelet production due to antibody-mediated megakaryocyte dysfunction contributes to thrombocytopenia [4]. The interplay of these immune mechanisms results in heterogeneous clinical courses, ranging from self-limited, acute

disease to persistent or chronic ITP lasting beyond 12 months [5]. Although most children experience spontaneous remission within 6–12 months, approximately 20–30% develop chronic ITP, necessitating ongoing monitoring and occasionally long-term therapy [6]. Identifying early predictors of chronicity is therefore clinically important for guiding management, counseling families, and optimizing follow-up strategies. Previous studies have suggested that older age at diagnosis, female sex, insidious symptom onset, and higher baseline platelet counts may be associated with chronic disease, but findings have varied across populations [7,8]. Management of pediatric ITP has shifted toward a more conservative approach, emphasizing observation in children with mild bleeding and reserving pharmacological therapy for those with clinically significant hemorrhage [9]. First-line treatments typically include Intravenous methylprednisolone and corticosteroids, which are effective in rapidly increasing platelet counts but are not required in all cases [10]. Early recognition of children at risk for chronic ITP may help clinicians make informed decisions regarding treatment intensity and follow-up frequency. In this study, we evaluated 25 children with newly diagnosed ITP at a tertiary care center. The objectives were to describe the clinical presentations, treatment modalities, and outcomes, and to identify demographic, clinical, and laboratory predictors associated with chronic ITP. Understanding these predictors is essential for improving prognostic assessment and tailoring management strategies in pediatric patients.

MATERIALS AND METHODS

This prospective observational study was conducted at a Department of Paediatric Hematology & Oncology, BSH&I, Dhaka, Bangladesh from July 2023 to December 2024 over 18 months. A total of 25 children aged 1–15 years with newly diagnosed ITP (platelet count <100,000/µL and no other cause of thrombocytopenia) were enrolled. Exclusion criteria included secondary thrombocytopenia due to leukemia, aplastic anemia, systemic lupus erythematosus, or drug-induced causes.

Demographic data, clinical features, and laboratory parameters (complete blood count, peripheral smear) were recorded at diagnosis. Patients were managed according to standard guidelines with either observation, Intravenous methylprednisolone 3 to 5 days followed by oral prednisolone, or corticosteroids depending on bleeding severity. Follow-up visits were scheduled at 1, 3, 6, and 12 months, with platelet counts measured at each visit.

Outcome categories were defined as:

- **Complete remission:** Platelet count >100,000/µL sustained for at least 3 months.
- **Persistent ITP:** Thrombocytopenia lasting 3–12 months.
- **Chronic ITP:** Thrombocytopenia >12 months.

Statistical analysis was performed using Chi-square test or Fisher's exact test as appropriate. A p-value <0.05 was considered statistically significant.

RESULTS

Baseline Characteristics (Table 1):

The study cohort consisted of 25 children with newly diagnosed ITP, with a mean age of 4.5 ± 2.9 years. Five children (20%) were older than 10 years. The male-to-female ratio was 1.5:1, with 15 males and 10 females. The mean platelet count at presentation was 18,000/µL, ranging from 5,000 to 45,000/µL. Petechiae and purpura were observed in 80% of patients (20 children), making it the most common presenting feature, while mucosal bleeding such as epistaxis or gum bleeding was seen in 20% of children (5 patients). No patients presented with life-threatening hemorrhage.

Treatment Modalities (Table 2):

Of the 25 children, 21 (84%) received active treatment based on the severity of bleeding. Intravenous methylprednisolone was administered to 12 children (48%), and corticosteroids were used in 9 children (36%). Four children (16%) were managed conservatively with observation only, as their bleeding manifestations were mild and did not warrant pharmacologic intervention. All treated patients demonstrated a rise in platelet counts within 72 hours of therapy.

Outcomes at 12-Month Follow-Up (Table 3):

At the end of the 12-month follow-up, 20 children (80%) had achieved complete remission, defined as a sustained platelet count >100,000/µL without treatment. The remaining five children (20%) continued to have thrombocytopenia beyond 12 months and were classified as having chronic ITP.

Predictors of Chronic ITP (Table 4):

Analysis of potential predictors showed that older age (>10 years) was associated with chronicity, with 60% (3 out of 5) of older children developing persistent thrombocytopenia (p = 0.04). Female sex was also a significant predictor, with 40% of females progressing to chronic ITP compared to 13% of males (p = 0.03). Additionally, children with a higher platelet count at diagnosis (>30,000/µL) had a higher likelihood of chronic disease (50% vs 14%, p = 0.05). These findings indicate that older children, females, and those with relatively higher initial platelet counts are at increased risk for chronic ITP.

Table 1: Baseline Characteristics of Study Population

Variable	Value
Mean age (years)	4.5 ± 2.9
Age > 10 years	5 (20%)
Male: Female ratio	1.5: 1
Mean platelet count (µL)	18,000
Petechiae / Purpura	20 (80%)
Mucosal bleeding	5 (20%)

Table 2: Treatment Modalities Used

Treatment Option	Number (%)
Intravenous Methylprednisolone	12 (48%)
Corticosteroids	9 (36%)
Observation only	4 (16%)

Table 3: Outcomes at 12-Month Follow-Up

Outcome Category	Number (%)
Complete remission	20 (80%)
Persistent/Chronic	5 (20%)

Table 4: Predictors of Chronic ITP

Predictor	Chronic (%)	p-value
Age > 10 years	3/5 (60%)	0.04*
Female sex	4/10 (40%)	0.03*
Platelet > 30k/µL	3/6 (50%)	0.05*

*Statistically significant (p < 0.05)

DISCUSSION

The present study evaluated the clinical outcomes and predictors of chronicity in 25 children with newly diagnosed ITP over a 12-month follow-up period. Our results showed that 80% of children achieved complete remission, whereas 20% developed persistent or chronic ITP. These findings are in line with earlier studies reporting that approximately two-thirds to three-quarters of pediatric ITP cases resolve spontaneously within the first year [6,7]. Age greater than 10 years was a significant predictor of chronicity. This is consistent with prior studies suggesting that older children are more likely to develop chronic ITP [5]. A more mature immune system may mount a stronger autoimmune response, resulting in prolonged platelet destruction [4]. Female predominance among chronic cases was another notable observation, in line with reports that autoimmune disorders, including ITP, are more frequent in females [5,6]. Interestingly, children with higher platelet counts (>30,000/µL) at diagnosis had a higher risk of chronic disease. Although this may seem paradoxical, similar findings have been reported, with milder thrombocytopenia associated with a slower, persistent course [7-10]. It is hypothesized that acute, severe ITP may represent a more transient immune activation, whereas mild thrombocytopenia may reflect ongoing low-grade autoimmunity. Overall, treatment response was excellent, with most patients responding to Intravenous methylprednisolone or corticosteroids, and no severe bleeding events occurred. This supports the current practice

of reserving treatment for children with significant bleeding symptoms while observing those with mild manifestations. Strengths of this study include prospective follow-up and standardized outcome definitions. Limitations include the relatively small sample size and single-center design, which may limit generalizability. Future multicenter studies with larger cohorts are recommended to develop more robust prognostic models. In summary, most children with ITP have a favorable prognosis, but a subset remains at risk for chronic disease. Recognition of predictors such as older age, female sex, and higher platelet counts can help clinicians individualize follow-up and management strategies.

CONCLUSION

Most children with newly diagnosed ITP experience a self-limited course, with spontaneous remission occurring in the majority. Older age, female sex, and higher platelet counts at presentation are important predictors of chronicity. Early identification of these risk factors allows for closer monitoring, timely intervention, and appropriate counseling of families.

Conflict of Interest: None.
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