Original Article

Epidemiology of Idiopathic Thrombocytopenic Purpura in Children

Nazari SH MD[1], Abdollah Gorji F MSc[2], Sadeghi-Koupai MT PhD[3]

1-Department of Pediatric Hematology and Oncology, Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
2- Clinical Research Development Center, Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3- Faculty of Pharmacy, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

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Abstract

Background

Immune thrombocytopenic purpura (ITP) is a common autoimmune bleeding condition in children that is characterized by a decrease in the platelet count. The aims of this study were to define epidemiologic features of patients with primary ITP who were admitted to Mofid Children's Hospital, Tehran, Iran, in a 5-year period.

Methods

We retrospectively studied the records of patients aged from 1 month to 13 years, who were admitted with the diagnosis of ITP at our hospital. Demographic and clinical variables such as platelet counts, prescribed medicine and transforming to chronic ITP were studied.

Results

One hundred and seventy two patients were eligible to enter this retrospective study. Mean age was 41.5 (from 1 to 160 months), which 98 were boys (57%) and 72 were girls. 130 (75.6%) and 42 (24.4%) patients had a platelet count less than 25000 and 10000/mm^3, respectively. Younger patients significantly had a more severe sign (P=0.04). There was a significant relationship between younger age and chronic ITP (P<0.001. Chronic ITP significantly happened more frequent in girls than boys (P=0.01). Treatment did not have any significant influence on the time to remission, platelet level after one month, or change to chronic ITP.

Conclusion

This study showed that age Male gender increased the risk of severe disease while female gender was risk factors for transforming into chronic ITP. However, together with others reported from different centers in Iranian may provide a good overview of the epidemiology of ITP in Iran.

Keywords

Purpura, Thrombocytopenic; Idiopathic, Children, Epidemiology, Iran

Coresponding Author
Shiva Nazari M.D. Assistant Professor, Department of Pediatric Hematology and Oncology, Mofid Children's Hospital, Shahid Beheshti University of Medical Sciences, Shariati Ave, Tehran, 1983963113, Iran. Tel: +98 21 22227021-9; Fax: +98 21 22220254. Email: Shnazari2000@yahoo.com .

Introduction

Immune thrombocytopenic purpura (ITP) is a common autoimmune bleeding condition in children that results in increased platelet destruction(1). It is characterized by a decrease in the platelet count and bleeding happens in more severe forms (1). ITP is usually self-limiting in children and its incidence is reported to be around 4 per 100000 per year (2). ITP can be classified as primary or idiopathic and secondary caused by drugs, vaccination, infections and so on (2, 3). Inappropriate response of the immune system produces autoantibodies against platelet surface glycoproteins (particularly IIb/IIIa), which accelerates platelets degradation (4). This antibody could commonly be detected in ITP patients. However, it has no prognostic value and this is not a useful diagnostic test (2).

Based on the duration of thrombocytopenia, ITP can also be classified as "acute" versus "chronic". Thrombocytopenia resolving before 6 months is called acute, and more than 6 months is called chronic. The acute form of ITP is mostly observed in children, which is found in 60 to75% of the patients. This thrombocytopenia resolves within 2 to 4 months of diagnosis regardless of treatment (5, 6). The incidence of acute ITP in boys and girls is equal in 1 to 7 years old (6). The adult form of the disease tends to become chronic, and has a higher incidence in females (7).

This study aims to define epidemiologic features of patients with ITP who were admitted to Mofid Children's Hospital in 5 years.

Materials and Methods

We retrospectively studied the records of all patients, aged from 1 month to 13 years, who were diagnosed with ITP at Mofid Children's Hospital from March 2005 to March 2010. Children suffer from any disorders rather than ITP were excluded from this study. Data included demographic characteristics, platelets count at the time of admission, one month later and after 6 months of treatment, prescribed treatment, response to treatment, result of the bone marrow aspiration (BMA) and the clinical outcome in the chronic cases. Severe ITP was defined as platelet count below 25000/mm^3. Chronic ITP was defined as platelets count less than 50000/mm^3 after 6 months from the beginning of treatment. Then collected data were analyzed using SPSS software (version 15.0, Chicago, IL, USA). The data were reported as means ± standard deviation. For intergroup comparisons, we used Chi-square test and subsequently the Mann-Whitney U test and Student t-test were used for comparing group means. A P-value <0.05 was considered significant.

Results

A total of 172 patients were eligible to enter this retrospective study. Mean age of them was 41.52 months (from 1to 160 months), which 98 were boys (56.9%) and 74 were girls. General characteristics of the patients are summarized in table I. The majority of the patients were less than 12 months. (n= 60, 34.9%) (Fig 1)

At the time of admission, 130 (75.6%) patients had a platelet count below 25000/mm^3 including 48 (27.9%) patients with a platelet count below 10000/mm^3. There was a significant difference between the severe and non-severe ITP regarding age (P=0.04). Younger patients were found to have a more severe disease. Only two patients had serious bleeding and received blood transfusion. Mild dermal and mucosal bleeding was usually reported or easy bruisability, which did not need blood transfusion. Bone marrow aspiration showed an increase in the number of megacaryocytes in 160 (93.02%) patients. No death or intracranial bleeding was reported in the study group.

Chronic ITP was observed in 36 (20.9%) patients. Their mean age was 15.8 months, and 19 were female (52.8%). Significant relationship was found between younger age and chronic ITP (P<0.001). Also, female patients were significantly more susceptible to transform into the chronic form .

Corticosteroids was used for treatment of 63 patients with acute ITP (46.3%), intravenous immunoglobulin (IVIG) for 101 (74.3%) and anti-D for 9 (6.6%) patients. No drug complication was reported in these patients. Response to treatment showed by platelet count, which was not different with any medication (P=0.45).

Corticosteroids are prescribed in all patients with chronic ITP. Those who had hemorrhagic symptoms were treated with cyclosporine (86.1%), IVIG (13.9%), danazol (13.9%), Anti-D (11.1%), Interferon A (5.6%), vincristin (2.8%), azatioprin (2.8%) and anti CD_{20} antibody (2.8%). In case of inappropriate response to initial treatment, patients received combination therapy.

Various medications did not have any significant influence on the time of remission, platelet level after one month, and transforming into chronic ITP.

Table I: General characteristics of patients with ITP

Characteristic	Total population
Age, month (median [min-max])	41.52 [1-160]
Infants, n (%)	60 (34.9)
Male Gender, n (%)	98 (56.9)
Baseline platelet count, /mm^3 (median [min-max])	15150.5 [1000-32000]
Platelet count after 1 month, /mm^3 (median [min-max])	183700 [26000 -460000]
Platelet count after 6 months, /mm^3 (median [min-max])	221360 [39000 -594000]

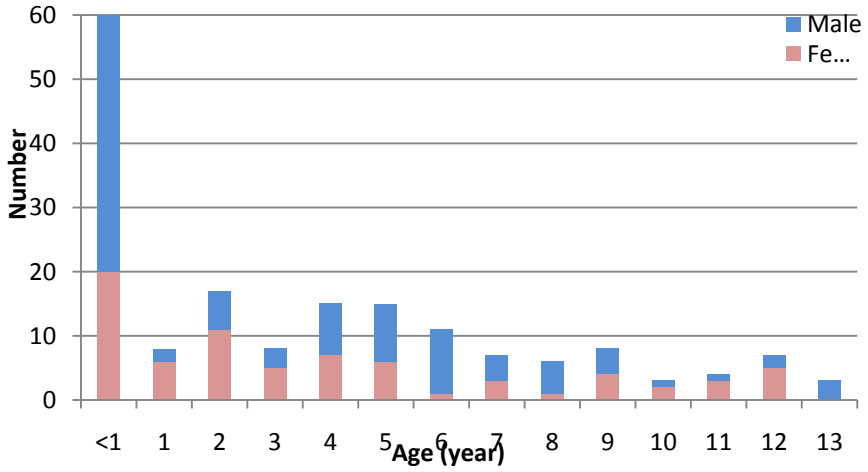

Figure 1: Age and gender distribution of patients with ITP (n=172)

Discussion

This study described the epidemiology and clinical characteristics of children with ITP younger than 13 years of age who were admitted at Mofid Children Hospital from March 2005 to March 2010. The median age of children was 3.46 years, which the majority of them were younger than 12 months. Boys were affected more than girls. Also male gender and female gender were risk factors for severe disease and chronic form, respectively.

There are several epidemiologic studies about ITP in children, but their findings are diverse due to differences in methodology or ethnicity and genetics of the patients (3).

Age and gender are the two most important factors in all studies of ITP in children (8). The mean age of affected children was normally about 4-5 years in most studies, which confirmed our results (3, 9, 10). Female were more affected than male in previous studies (11), which is against our finding. However, our results had a significant influence between male to severity and female to chronic ITP.

ITP is self limiting and not life threatening in most cases (2). Although complications of ITP in children are rare, they can be dangerous (12). In our study, no serious complication was observed.

Almost 25% of ITP cases become chronic (8). Remission potentially depends on the socioeconomic factors. About 75%–90% of ITP cases in high income countries completely remitted and mortality rate is 0.1%-0.5%. Remission in the low-income countries is about 44%–100%, independent to treatment (12). A Japanese study showed that age (older than 5 years), initial platelet counts, and superimposed infection were highly associated with the chronic type of the disease (13). In our study, female gender was risk factors for chronicity, irrespective of treatment given. It is suggested to search for underlying diseases in chronic ITP, such as systemic lupus erythematosus, but it was not found in our records (2).

There are still debates about the treatment of ITP, particularly in chronic cases (14). Glucocorticosteroids are thought to have a various mechanism of action (12). In cases with platelet count <10000/mm3, steroids were prescribed without any proven benefit. IVIG is suggested as the drug of choice by the American Society of Hematology, but it has no benefit over corticosteroids (15). Observing patients is recommended as the best treatment in ITP (12). In our study, there was no significant different between the prescribed medications regarding time of remission, rise of platelet counts after one month, or change to chronic ITP.

In conclusion, age and gender pattern in this study was similar to other countries. Male gender increased the risk of severe disease while female gender was risk factors for transforming into chronic ITP. Future multicentre study should be done for ITP to provide a good overview of the epidemiology of ITP in Iran.

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Conflict of interest

The authors declare no conflict of interest.

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