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Case Report Open Access

Recurrent Immune Thrombocytopenic Purpura: Interesting Case of a Child with 5 Recurrences

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Abstract

Immune thrombocytopenic purpura [ITP], also known as idiopathic or autoimmune thrombocytopenic purpura, is a benign hematological disorder characterized by a low circulating platelet count, caused by destruction of antibody-sensitized platelets in the reticuloendothelial system. It is a common cause of acquired thrombocytopenia particularly in children, which often remits in weeks to years. ITP can be classified based on duration of thrombocytopenia as acute and chronic form. Recurrent ITP is defined as recurrence of symptoms, after at least three months of remission without treatment. It is rare entity and seen in just 5% of all ITP cases. Further, its treatment is often cumbersome and warrants use of non-conventional drugs and splenectomy. We report a case of ITP in a 9 year old boy, who presented with five recurrences and all episodes were successfully treated with just oral prednisolone.

Keywords: Recurrent immune thrombocytopenic purpura; ITP; Thrombocytopenia; Prednisolone

Introduction

Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disorder characterized by increase in destruction of circulatory platelets and is the most common cause of acquired thrombocytopenia in childhood [1]. ITP can be classified based on patient age (adult or childhood ITP), and duration of thrombocytopenia (newly diagnosed ITP or chronic) [2]. Newly diagnosed ITP is designation given for the 1st 3 months after diagnosis. Chronic ITP by definition persists for more than 12 months. In between acute and chronic category there is another entity called Persistent ITP, which is defined as ITP with low platelet count persisting for 3 to 12 months [3]. The true incidence of ITP has not been well established and varies based on the definition of the platelet count threshold. The annual incidence of ITP is estimated to be 5 cases per 100,000 children and range from approximately 1.6 to 3.9 per 100,000 adults [4]. Recurrence in ITP is defined as return of symptoms after at least 3 months of remission sustained without treatment and is seen in nearly 5% of cases [5].

The clinical presentation and course of ITP differ in children and adults. In children, ITP is usually an acute, self-limited disorder often occurring 2–3 weeks after a viral infection or immunization and resolves spontaneously. In contrast, ITP in adults, has an insidious onset, with no preceding viral or other illness, and has a chronic course. In about one third of adults with ITP, the condition is persistent and relatively resistant to most treatments [6].

In ITP an abnormal autoantibody, usually immunoglobulin G (IgG) with specificity for one or more platelet membrane glycoproteins (IIb/IIIa and Ib/IX), binds to circulating platelet membranes [7-9]. Autoantibody-coated platelets induce Fc receptor-mediated phagocytosis by mononuclear macrophages, primarily but not exclusively in the spleen [10]. The spleen is the key organ in the pathophysiology of ITP, not only because platelet autoantibodies are formed in the white pulp, but also because mononuclear macrophages in the red pulp destroy immunoglobulin-coated platelets [11]. If bone marrow megakaryocytes fail to increase its production to maintain a normal number of circulating platelets, thrombocytopenia subsequently develops. Further, impaired thrombopoiesis is attributed to failure of a compensatory increase in thrombopoietin and megakaryocyte apoptosis [2]. Although the development of autoantibodies against platelet glycoproteins remains central in the pathophysiology of ITP, several abnormalities involving the cellular mechanisms of immune modulation have been recently identified [2].

ITP remains a diagnosis of exclusion and is primarily based on the patient's history, physical examination, complete blood count, and peripheral smear [6]. Thrombocytopenia with normal blood counts and increase in megakaryocytes in bone marrow are typical findings. Treatment of patients with ITP must take into account the age of the patient, the severity of the illness, and the anticipated natural history. The first line of treatment available for ITP includes glucocorticoids, high dose intravenous immunoglobulin and for children who are rhesus positive, intravenous anti-Rho (D). Splenectomy is traditionally considered to be the second-line treatment of those children who have well-established, symptomatic chronic ITP and who have failed or are intolerant of first line therapies [12]. An array of third line therapies have been reported to have some activity in chronic and refractory ITP like rituximab, azathioprine, cyclophosphamide, danazol, vinca alkaloids, and ascorbic acid etc. Recently, Thrombopoietin receptor agonists Romiplostim and Eltrombopag have been approved by FDA [13].

Amid all the recent developments in path-physiology and treatment of ITP, we report a case of ITP in a 9 year old boy, who presented with five reoccurrences and each episode was successfully treated with mere prednisolone.

Case Report

A 9 year old boy presented with complaints of petechaeal rash over body for five days and bleeding from nose for two days. No history of fever or pallor was elicited. Nose bleed comprised only 5 to 6 drops of fresh blood and subsided spontaneously or with local pressure. The child was active and playful. On examination, petechiae and purpura

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were present over the trunk, extremities, face and oral mucosa (Figure 1). There was no organomegaly and lympadenopathy. His vitals were stable and blood pressure was within normal range for the age. On laboratory investigations hemoglobin was 11 gm%, total leukocyte count was 9.25 x 10^9/L, with Polymorphs 66%, Lymphocytes 32% and Eosinophils 02%, erythrocyte sedimentation rate was 14 mm in 1st hour and platelet count was 11.2 x 10^9/L. Renal function test, liver function test and coagulation profile were within normal limits. Anti-nuclear antibody and serology for HIV and hepatitis B surface antigen were negative.

On account of compatible history and supportive examination findings a presumptive diagnosis of acute Immune thrombocytopenic purpura was made. Bone marrow biopsy was done before starting treatment. Bone marrow examination showed increased number of megakarocytes without any other abnormality. Since the platelet count was less than 20 x 10^9/L with mucosal bleed, the decision to treat the child was taken. Patient was started on Tablet Prednisolone, in a dose of 2 mg/kg/day for 4 weeks, with weekly follow up. Patient responded well to the treatment and his platelet count increased to 26.4 x 10^9/L after first week. After 4 weeks, his platelet count reached 221 x 10^9/L and glucocorticoid therapy was tapered over next 4 weeks and finally stopped.

After 6 months of remission, at the age of 10 years and 8 months patient again presented with petecheal rash over body and a diagnosis of ITP was made on similar ground. This time his platelet count was 9.0 x 10^9/L, which increased to 153 x 10^9/L after 4 weeks of treatment with prednisolone.

Patient presented with 4 more recurrences following this episode, after 4, 8, 9 and 6 months of respective previous episodes at the ages of 11 years and 2 months, 12 years, 12 years 11 months and 13 years and 7 months respectively. On each occasion patient was subjected to the same investigations, (except ANA and HIV/HBs serology) and his platelet count were 14.2, 21.6, 11.8 and 16.9 x 10^9/L respectively. Only on one of these occasions, patient had mucosal bleed with a platelet count of 11.8 x 10^9 /L (at the age of 12 years and 11 months) and for this episode it was decided to treat the patient with prednisolone. For remaining 3 episodes patient was only followed up weekly without any treatment. After eight weeks patient had normal platelet count for all of these 4 episodes. Now the child is 16 year of age and is being followed up for the last two and a half years. No further recurrence has been documented yet.

Figure 1: Patient a 9 year old boy with petechiae and purpura present over face and oral mucosa.

Discussion

ITP is an autoimmune disease in which anti-platelet immunoglobulins bind to platelet membranes leading to premature death. The antibody coated platelets are rapidly removed by spleen and liver macrophages. An estimated 5% of paediatric patients have recurrent episodes of thrombocytopenia followed by variable periods of remission. This is presumed to reflect a chronic compensated state of ITP [14]. During periods of remission, increased platelet production balances the increased rate of platelet destruction, but during exacerbations, platelet production by the marrow is suppressed by viral infections or other factors and is unable to offset the rate of destruction [14].

Treatments options available for recurrent ITP patients, not responding to glucocorticoids range from rituximab, azathioprine, cyclophosphamide, danazol, vinca alkaloids, ascorbic acid, colchicine, interferon-α, combination chemotherapy, protein A immunoadsorption, cyclosporine, ε-aminocaproic acid, plasma exchange, to recently approved thrombopoietin receptor agonists [12]. Splenectomy is considered in patients who do not respond to these drugs. Corticosteroids were the mainstay of treatment in our patient. The main mechanism of action has been hypothesized as decrease autoantibody production; [15] improved integrity of leaking capillaries [16] and impaired clearance of antibody-coated platelets by mononuclear macrophages [17].

Although recurrent episodes of ITP have been previously reported in literature but these patients often don't respond to first line immunosuppressive therapy. To our best of knowledge this is the first case of ITP having five recurrences, thoroughly followed up and all episodes treated successfully with mere prednisolone.

Conclusion

Idiopathic Thrombocytopenic Purpura (ITP) can present as multiple episodes of recurrences in children and can be treated satisfactorily with prednisolone and a trial of prednisolone should be given before resorting to other costly treatments.

Consent

Written informed consent was obtained from the patient's guardian for publication of this case report and accompanying image. A copy of the written consent is available with the authors.

Competing Interests

The author(s) have no competing interests.

Authors' Contributions

MA and AA collected the data, and analysed and interpreted the literature and put together the case report; TE was involved in collecting pictures and reviewing articles, MA, and AA drafted and proof-read the manuscript, and SMA, MA and AA gave final approval of the version to be published. All authors read and approved the final manuscript.

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