Unusual hematologic disease affecting Caucasian children traveling to Southeast Asia: acquired platelet dysfunction with eosinophilia

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Abstract

An 11-year-old American boy was staying with his family in Indonesia. He presented with a 5-month history of recurrent bruises and ecchymosis. A clinical diagnosis of acquired platelet dysfunction with eosinophilia was made when his full blood counts showed hyper eosinophilia (7.4×10^9/L) with normal platelet count and gray platelets under the microscope. The diagnosis was supported by abnormal platelet aggregation tests consistent with a storage pool disorder. The bleeding symptoms and eosinophilia resolved a month later with a full course of antihelmintic therapy. Hematologists should be aware of this unusual disease in travelers returning from the Southeast Asia.

Introduction

Acquired platelet dysfunction with eosinophilia (APDE) is usually a self-limiting bleeding disorder characterized by an insidious onset of easy bruising with petechiae in an otherwise well person. Hypereosinophilia is often the first clue to diagnosis, which is supported by the findings of a platelet storage pool disorder. APDE has been mainly reported from Thailand, Malaysia, and Singapore, but its true incidence has not been studied. The condition has rarely been reported elsewhere and hence travelers returning from an endemic area may present with a diagnostic challenge.

Case Report

An 11-year-old Caucasian boy presented with recurrent cutaneous bruises and ecchymosis for five months. The child’s past health was only remarkable for occasional asthmatic attacks when he was small and he had no prior history of bleeding tendency or excessive swelling following vaccinations. Fifteen months ago, the family moved from the United States and lived in central Java, Indonesia. Five months before the consultation, he was noticed to have recurrent, unprovoked bruising of the skin with occasional epistaxis and gum bleeding. There were no symptoms of gastrointestinal, genitourinary, or intra-articular hemorrhage. He had not been noted to have worms in the stool although he had been treated with antihelmintics every 3 to 4 months. The family history was negative for bleeding diathesis. The child was otherwise well and continued to go to school as usual.

On examination, there were multiple bruises from 1 to 3 cm in maximum dimension with petechiae over the limbs, the scalp, the chest and abdominal wall. There was no mucosal bleeding, cervical lymphadenopathy, or hepatosplenomegaly. Laboratory investigations showed hemoglobin 12.8 g/dL, white cell count 14.8×10^9/L, eosinophils 7.4×10^9/L, platelet 223×10^9/L, IgE >2,000 IU/mL. Serum biochemistries, liver transaminases, prothrombin time, partial thromboplastin time, and other immunoglobulin levels were normal. No ova or parasites were found in the stool. The chest X-ray was normal. The peripheral blood film shows prominent eosinophilia with the presence of gray platelets (Figure 1). The results of the platelet aggregation tests showed defective aggregation with collagen and epinephrine, consistent with a platelet storage pool disorder (Table 1). Thus, a diagnosis of APDE was made.

He was empirically treated with albendazole 400mg as single dose and a repeated dose two weeks later. All the family members were also advised to take the same treatment. The bleeding symptoms gradually subsided a month later. The absolute eosinophil counts fell to 0.67 and 0.63×10^9/L one and four months afterwards, respectively. Parents reported that the child remained well at one year after the last consultation.

Discussion

Acquired platelet dysfunction with eosinophilia (APDE) is a unique disease that was first and almost exclusively described in the region of Thailand, Malaysia and Singapore. The condition affects mainly patients of the pediatric age group, but adults are not spared. Helminthic infestation has been associated with APDE in about 50% of the cases, but how helminthes would explain the geographic occurrence is mysterious. The thrombocytopathic bleeding is evidenced by a prolonged bleeding time and positive Hess’s test, degranulated platelets, and abnormal platelet aggregation tests consistent with a platelet storage pool disorder. The platelet dysfunction is believed to be secondary to eosinophilia but raised eosinophil counts are not found in all patients.

Losombat et al. reported from Thailand a large cohort of 168 children diagnosed with APDE. The majority of them presented with mild cutaneous bruises only, but 14 (8%) of them had severe bleeding symptoms that necessitated platelet transfusion therapy. No mortality was reported. The bleeding manifestations resolved within 6 months of diagnosis, although 12 (7%) of them had a recurrence. Lucas reported 12 pediatric cases from Sri Lanka with mild symptomatology. All children were treated empirically with diethylcarbamazine and mebendazole and recovered within six months. Ruiz-Saez et al. described six cases of APDE from Venezuela. Intestinal parasites were found in all cases and five of them harbor multiple infestations. Five of them recovered within two months after antihelmintic treatment while the bleeding manifestations persisted for 36 months in the other patient.

APDE has to be distinguished from other causes of bleeding and myeloproliferative disorders. In particular, the presence of multiple bruises in the presence of normal platelet count and coagulation screen may be confused with accidental or non-accidental injury, while the extreme hyper eosinophilia may be suggestive of hypereosinophilic syndrome. A comprehensive review by a pediatric hematologist will be essential for an accurate diagnosis without embarking on distressing medical or social investigations. As the case has illustrated, the diagnosis of APDE can be reasonably reached with attention to the history, physical...
Table 1. The results of the patient’s platelet aggregation tests.

| Test               | Result | Normal ranges |
|--------------------|--------|---------------|
| ADP                | 69%    | 64-111%       |
| Collage            | 31%    | 68-117%       |
| Epinephrine        | 21%    | 46-122%       |
| Ristocetin         | 100%   | 80-115%       |
| Arachidonic acid   | 78%    | 52-110%       |

Table 2. Pediatric cases of acquired platelet dysfunction with eosinophilia reported from non-tropical countries.

| Cases | Sex/Age (year) | Reporting countries | Countries traveled | Parasitology/Recovery | Ref |
|-------|----------------|---------------------|--------------------|------------------------|-----|
| 1     | Female/8       | United Kingdom      | Malaysia           | No parasite found     |     |
|       |                |                     |                    | Recovered in 3 months | 11  |
| 2     | Male/5         | Canada              | Malaysia           | No parasite found     |     |
|       |                |                     |                    | Recovered in 1 month  | 12  |
| 3     | Male/6         | Canada              | Malaysia           | No parasite found     |     |
|       |                |                     |                    | Recovered in 2 months | 12  |
| 4     | Male/4         | Hong Kong           | Thailand           | No parasite found     |     |
|       |                |                     |                    | Recovered in 1 month  | 13  |
| 5     | Female/8       | Hong Kong           | Nepal              | No parasite found     |     |
|       |                |                     |                    | Recovered in 1 month  | 13  |

Figure 1. Photomicrograph of the blood film (×100) showing an eosinophil of normal morphology (Eo), a platelet of normal morphology (P), and platelets that appear pale and agranular (arrows). The latter feature is highly suggestive of thrombocytopeny and should obviate the need to measure the bleeding time.

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