CASE REPORT

Corticosteroid-responsive Prolonged Thrombocytopenia following Dengue Haemorrhagic Fever

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Summary

A case of prolonged thrombocytopenia following dengue haemorrhagic fever in a 15 year old boy is reported. The mechanism was presumed to be immunological and he responded dramatically to oral prednisolone.

Key words: Thrombocytopenia, dengue.

Introduction

A case of acute idiopathic thrombocytopenia purpura following dengue haemorrhagic fever is described. No case has so far been reported. Diagnosis is important as corticosteroids rapidly improve the situation.

Case Report

CTP, a 15 year old Chinese schoolboy, presented with 1 week of high fever with chills. One day before admission, he developed spontaneous gum bleeding with a generalised erythematous rash, especially over the lower limbs. He had generalised myalgia. He had not experienced any headache, retro-orbital pain, joint pains or epistaxis. There was no significant drug history. He had not sought any traditional forms of treatment.

On examination, he appeared flushed, mildly dehydrated with a generalised erythematous macular rash more prominent over the lower limbs. Petechiae were also present, especially over the lower limbs. His conjunctiva was injected and palatal petechial haemorrhages were present. He had mild spontaneous bleeding from the gum margins. His blood pressure was 120/60 with a pulse rate of 78/min. Fundoscopy did not reveal any haemorrhages. The rest of the physical examination was essentially normal.

The provisional diagnosis was dengue haemorrhagic fever (DHF).

Investigations on admission:

Haemoglobin 13.4 g/dl, PCV 0.43, platelet count 6 x 10^9, total white blood cell 3.2 x 10^9/1 (neutrophils 19%, lymphocytes 68%, eosinophils 1%, monocytes 2%, atypical lymphocytes 10%).

Prothrombin time ratio 1.13, partial thromboplastin time 49.7 seconds as compared to normal of 36.3 seconds.

Aspartate transaminase 60 iu/l, alanine transaminase 71 iu/l.

IgM to dengue was detected and rising titres from the haemagglutination inhibition (HI) test confirmed a diagnosis of DHF. On admission, the HI was 1:640 for Dengue II and III, rising to 1:1280 on the tenth admission day and subsequently dropping to 1:320 at 1 month.

Complement levels and antinuclear factor were normal.

He was rehydrated with intravenous fluids and given 2 units of platelet concentrate on admission. His full blood count, prothrombin time and partial thromboplastin time were monitored daily. The platelet counts are shown in Fig 1. As shown in Fig 1, he required further transfusions of platelet concentrate since the platelet count remained low with clinical evidence of gum bleeding. His partial thromboplastin time normalised spontaneously by the seventh admission day. He continued to have a low grade temperature for 5 days. Subsequently, he was afebrile, with no further petechial haemorrhages. His rash faded away by the seventh admission day. He remained well without any signs or symptoms despite having severe thrombocytopenia in the 20 days after becoming afebrile. Ten days after admission, his platelet count was at its lowest at 8 x 10^9/1 and 4 units of platelet concentrate were transfused.

A bone marrow aspirate and trephine biopsy were performed 25 days after admission. Adequate megakaryocytes were found in the marrow, indicating peripheral destruction as the most likely cause for the thrombocytopenia. No abnormalities were found in the marrow. The platelet count then was 13 x 10^9/1.

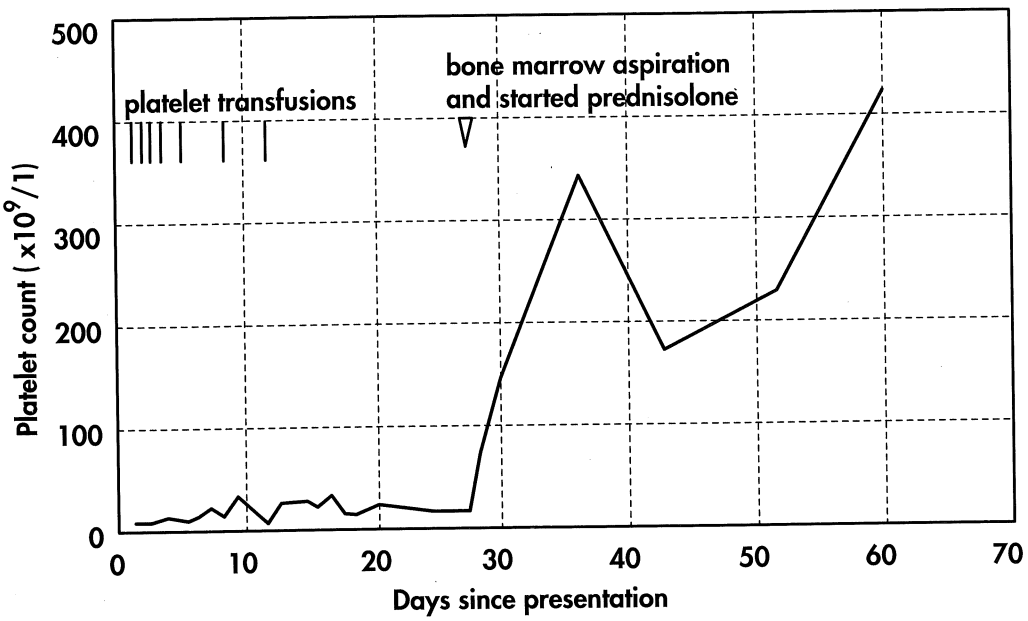

Fig 1: Platelet count and response to treatment.

A provisional diagnosis of immune-mediated thrombocytopenia was made. He was started on prednisolone 60 mg daily. As shown in Fig 1, his platelet count increased rapidly, reaching normal values after 3 days with prednisolone therapy. The dose of prednisolone was then tailed down, and stopped after 3 months. At follow-up, 6 months after admission, his platelet count remained normal.

Discussion

Thrombocytopenia is always present in DHF. In most cases of DHF, the platelet count recovers rapidly following the acute viral illness. Three possible mechanisms[1] have been postulated for the thrombocytopenia, i.e.:

i. dengue virus attaching itself to human platelets causing their destruction;

ii. interaction between platelets and endothelial cells with absorbed antigens; and

iii. immune complex formation.

In DHF, the platelet count usually reaches its lowest level as the patient is about to recover, i.e., about 1 week after the onset of fever[2]. It recovers promptly in the ensuing week, usually on day 9 to 10 of illness. Our patient had thrombocytopenia for a total of 25 days before prednisolone was started.

Acute idiopathic thrombocytopenia purpura (ITP) can develop 7 to 10 days after infectious mononucleosis, mumps, rubella or rubeola[3]. It generally occurs at a time when the virus is cleared from the circulation. In a majority of children with acute ITP, there is an antecedent upper respiratory tract infection. Most cases recover spontaneously within a few weeks. Thrombocytopenia occurs in acute ITP by 3 possible mechanisms:

i. inappropriate production of platelet-specific autoantibodies in conjunction with the immune response against a virus;

ii. crossreacting antibodies against viruses; and

iii. platelets binding to immune complexes[3].

All clinical features of our patient's viral illness had subsided after 7 days. Adequate megakaryocytes confirmed by bone marrow aspiration and trephine, with thrombocytopenia, was present in our patient at a time when the virus would normally have been cleared. Thus, a diagnosis of acute ITP was made. Prednisolone therapy promptly improved the platelet count, suggesting an immune-mediated platelet destruction. To our knowledge, acute ITP following DHF has never been reported. It is unlikely that he had acute ITP before DHF as he was perfectly well until he presented to us.

It is important to diagnose acute ITP as there is a mortality of 1% to 3% as a result of intracranial haemorrhage. Short periods of corticosteroid therapy are generally safe and cause a rapid rise in the platelet count, thus decreasing the morbidity and mortality[4].

As thrombocytopenia is a frequent feature of DHF, it is difficult to diagnose acute ITP early. Our patient illustrates this difficulty. A possibility of acute ITP must therefore be entertained once an acute viral illness like dengue has passed and thrombocytopenia persists.

References

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