Case Report

Thrombocyteapheresis for the Treatment of Essential Thrombocythemia Presented as a Digital Ischaemia- A Case Report

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Abstract

Thrombotic manifestations of essential thrombocytosis (ET) may be a life threatening condition. The conventional cytoreductive therapy or radioisotopes may take long time to reduce the platelet counts whereas thrombocyteapheresis can reduce the count more rapidly. Here the reported case is an essential thrombocytosis presented with digital ischaemia and was managed with intermittent flow centrifugal thrombocyteapheresis combined with hydroxyurea to reduce the platelet count. Thrombocytopharesis is an effective method and safe to reduce platelet count acutely. Thrombocyteapheresis has been done for the first time for the treatment of essential thrombocythemia (ET) in BSMMU probably also in Bangladesh.

INTRODUCTION

Essential thrombocythaemia is a rare myeloproliferative disease and the incidence is 0.4–2.5 per 100,000 per year .[18] It has female preponderance and usually occurs at the fifth or sixth decade of life.[29] The JAK2 V617F mutation is positive in 50–60% of cases.[3] ET presents with haemorrhagic complications, due to platelet dysfunction, or thrombotic disorders like stroke, myocardial infarction, venous thrombosis, and digital ischaemia.[3] Platelet count is usually reduced with cytoreductive agents and thrombocyteapheresis. Because the usually used cytoreductive agents takes [7] to 10 days or more to reduce the platelet count in life-threatening increases of platelets or thrombotic condition , can only be lowered by removal of platelets.[3] Here we report a case of ET with digital ischaemia resistant to hydrooxyurea. Dramatic reduction of the platelet count by intermittent flow thrombocyteapheresis was achieved safely and swiftly in this patient .

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CASE RECORD

A 45- year- old woman was admitted in the department of Internal Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh with pain and change of color of left hand and both feet for two months and blackening of left fourth toe for 14 days (figure-1) which is not aggravated on exposure to cold. She was also suffering from intermittent headache and vertigo. She had a spontaneous miscarriage at first trimester and was on oral contraceptive pill for 5 years. Physical general examination revealed , she was mildly anemic, pulse was 100 beat per min and all peripheral pulses are present, blood pressure was 120/80 mm of Hg, respiratory rate was 14 breaths per min and on examination of the limbs , there was bluish discoloration of fingers of left hand & all toes , reddish coloration of left palm of hands and sole of feet, raised temperature, tender and dry gangrene in left 4th toe and levedo reticularis over sole of the feet (Figure-1). Systemic examination revealed normal. Investigations revealed FBC: Hb-11.7 gm/dl, ESR-35 mm 1st hour, RBC-4.15x10^12/L, Platelet-3500x10^9/L (35 lacs/cumm) , WBC count revealed total count-17.36x10^9/L, neutrophil-71%, lymphocyte- 24%, monocyte-4%, eosinophil-1%, basophil-0%, PCV-0.36 l/l,MCV-86.3 fl,MCH-28.2 pg,MCHC-32.7 g/dl, RDW(CV)-15.3% and peripheral blood film demonstrated ; RBC- anisocytosis and anisochromia, WBC-mature with above distribution, Platelet- markedly increase in number and plenty of platelet clumps and the comment was features suggestive of essential thrombocythaemia. (Figure-3) Bone marrow trephine biopsy revealed hypercellular marrow with increased M:E ratio with active erythropoesis and granulopoesis and grossly hyperactive with giant megakaryocytes with hyperlobulated nuclei, features consistent with essential thrombocythaemia. (Figure-4) The liver function, renal function, urine R/M/E and electrolyte was normal. CRP was 3 mg/dl, PT was 13

seconds, APTT was 33 seconds. The ANA, anti-phospholipid antibody, C-ANCA & P-ANCA, anti-CCP, HBs-Ag, anti-HCV all were negative. USG of abdomen and duplex scan of the both lower limbs were normal. JAK-2 V617F was negative. Her condition had initially improved after treatment with aspirin, hydroxyurea and antibiotic to treat super added infection in the hand. But it later, was refractory to medical treatment and platelet counts remained around thirty lacs and digital infarction progressed despite adequate dose titration of the drugs for two weeks. So, she underwent one episode of thrombocyteapheresis (figure-2) and her platelet count (Table-1) and digitral ischaemia was improved. After that she was on hydroxyurea and aspirin and followed up.

DISCUSSION

Essential thrombocythaemia presents with hemorrhagic complications, due to platelet dysfunction, or thrombotic disorders like stroke, myocardial infarction, venous thrombosis, and digital ischaemia. Thrombotic event are frequent when JAK2 V617F mutation is present.[3] Most of the time , the platelet count is elevated above 1000 × 109/L but the studies agrees a median level of around 800 × 109/L .[4]

Our patient presented with the persistent redness and pain of the feet and hands which suggest erythromelagia. We reached the diagnosis by excluding the all causes of reactive thrombocytosis by appropriate investigations. We used the revised diagnostic criteria for ET that were proposed in 2005.[5] We treated our patient with aspirin and hydroxyurea at first but she required one episodes of thrombocyteapharesis because she had inadequate response to medical therapy and consulted general surgery department for management of the gangrene.

Previous studies have shown that thombocyteapheresis can reduce the platelet count in a patient with thrombocytosis using intermittent flow centrifugation devices.[6,7] It is believed that patients with thrombotic or haemorrhagic manifestations associated with ET should be treated with thrombocyteapheresis in combination with cytoreductive therapy .

Our target was to remove 30% of the platelet count from the baseline according to ASFA guideline.[8] We used intermittent flow centrifugation (Haemonetic MCS+) by doing venous access using 16 G needle in the left anticubital vein. About 1.5 times of total blood volume was processed. The total procedure took 3 to 4 hours. Intermittent flow centrifugal technique was performed with only one vene puncture and blood is drawn and reinfused through same needle. [9]

During the procedure we observed pulse, blood pressure temperature and partial pressure of oxygen .After one episode of thrombocyteapharesis she had significant improvement of symptoms and platelet count was reduced (table-1) and after one episode of thrombocyteapharesis patient was maintained on hyhroxyurea. She was on follow up and remained well.

CONCLUSIONS

In summary, thrombocyteapheresis is effective measure of reducing platelet count and relieving acute symptoms quickly attributed to elevated platelet count in ET .We believe that procedure may reduce the morbidity associated with thrombotic manifestations of ET during the interval between administration and maximum effectiveness of the hydroxyurea.

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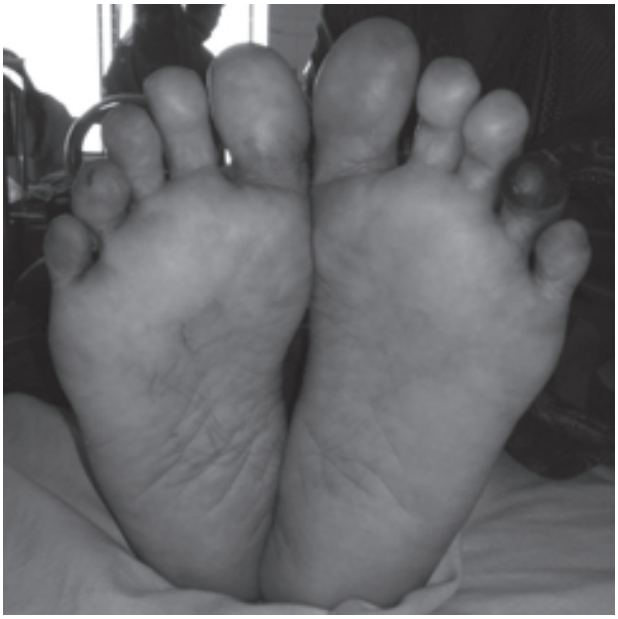

Figure: 1 Picture of feet showing redness, bluish discoloration and gangrene of the 4th toe

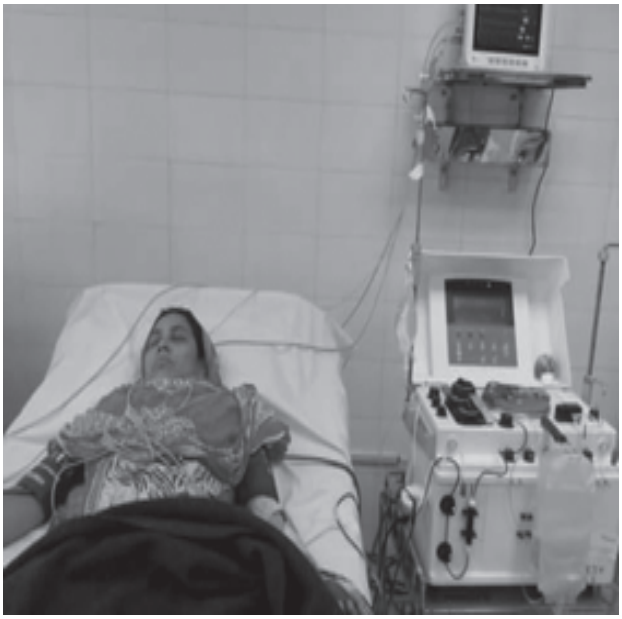

Figure : 2 procedure of thrombocytopharesis

Table-1: Serial platelet count before and after treatment

Table I: General Risk Factors of Burst Abdomen (n=100)

Date	Platelet count(10^9/ L)	Treatment
20.03.17	4660	
21.03.17	5000	Hydroxyurea – 1 gm
25.03.17	2500	
28.03.17	2000	
01.04.17	2600	Hydroxyurea – 1.5 gm
03.04.17	1200	
04.04.17	2500	
06.04.17	3080	Thrombocyteapharesis
08.04.17	850	