

Extreme Thrombocytosis in a Post Splenectomy Patient, a Rare Case Report

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Abstract

Background

The normal platelet in health remains from 1.5 L to 4.5 L/ μ L. Thrombocytosis can be defined as a platelet count 5 L/ μ L. Platelet counts >10 L/ μ L is very rare and it is known as extreme thrombocytosis. But usually happens to occur in myeloproliferative diseases or after spleen removal. Venous thrombosis in patient's spleen removal have platelet counts in between 6L to 8 L/ μ L most of the time and its incidence is around 5%. Platelet hyper aggregation is the ultimate outcome of these raised platelet count. Cause of thrombocytosis has no role in platelet hyper aggregation; Hence, the choice of therapy is to prescribe platelet-antiaggregating medication such as aspirin. In a case of very platelet counts more than 10L/ μ L (extreme thrombocytosis) along with associated arterial or venous thrombosis, treatment option is to give cytoreductive agents such as anagrelide or hydroxyurea. Observing platelet counts is mandatory.

Casereport

A 48-year gentleman presented extreme thrombocytosis after splenectomy. In post-operative period, reactive thrombocytosis was seen in this patient. Thrombocyte count was increased to 1498 K/ μ L on postoperative day 8. Patient was investigated for common causes of thrombocytosis like myeloproliferative diseases and malignancies. To prevent thrombotic events low molecular weight heparin and aspirin was prescribed. The patient remained asymptomatic till discharge; Thrombocytosis gradually declined to 500 k/ μ L on post-operative day 15.

Discussion

The overall pathological significance of a raised thrombocyte count is usually neglected, it can be suggestive of presence of an associated sepsis. Here it is our better try to find out relationship between raised platelet count and spleen removal. Another importance lies in a prevention of thromboembolic episodes.

Conclusions

Splenectomy was a very common cause of thrombocytosis. the hyposplenism, could have precipitated extreme thrombocytosis in present case.

Keywords: essential thrombocytosis, increased platelet count, primary thrombocytosis, Infection

Introduction

The normal platelet in health remains from 1.5 L to 4.5 L/ μ L. Thrombocytosis can be considered if as a thrombocytosis more than 5 L/ μ L. Platelet counts >10 L/ μ L is very rare and it is known as extreme thrombocytosis. But usually happens to occur in myeloproliferative diseases or after spleen removal. Venous thrombosis in patient's spleen removal have platelet counts in between 6L to 8 L/ μ L most of the time and its incidence is around 5%. platelet hyper aggregation is the ultimate outcome of these raised platelet count. Cause of thrombocytosis has no role in platelet hyper aggregation; Hence, the choice of therapy is to prescribe platelet-antiaggregating medication such as aspirin. In a case of very platelet counts more than 10L/ μ L (extreme thrombocytosis) along with associated arterial or venous thrombosis, treatment option is to give cytoreductive agents such as anagrelide or hydroxyurea observing platelet counts is mandatory ¹. The common etiologies of reactive thrombocytosis are infection, trauma, surgery, and occult malignancy. Splenectomy was found to be one of the main causes of thrombocytosis. The probability of thrombocytosis in patients who have had splenectomy is about 75~82% and about 9% of all reactive thrombocytosis occurrences are caused by this procedure. The platelet count in reactive thrombocytosis is expected to normalize after their solution of the underlying condition. We experienced a patient of extreme thrombocytosis after splenectomy without any complications such as bleeding or thrombosis.

CASE REPORT

A 48-year-old man brought to casualty with history of road side vehicular accident having pain in abdomen. Characteristic was continuous, non-tolerable, and localised but vague in character. On examination found to have tenderness in left hypochondriac region. a vague palpable lump of size 100 to 120mm below left costal margin. Due presence of guarding and rigidity it was not assessed properly. An ultrasound of the abdomen showed evidence of rupture of spleen of grade 4.

Blood examination shows evidence of low haemoglobin level (8 g/dL) and a platelet count of 2.50 lakh/ μ L. patient was subjected for a computed tomography scan of the abdomen without contrast examination. it shows rupture of spleen of grade 4.

(see Figure 1).



Figure 1 Computed tomography scan without contrast shows the tear in spleen (arrow).

He developed hypotension with tachycardia. Simultaneous resuscitation with blood transfusion along with emergency laparotomy performed. As there was evidence of injury to splenic pedicle splenectomy was performed (see figure 2). Histopathology was consistent with normal ruptured spleen.

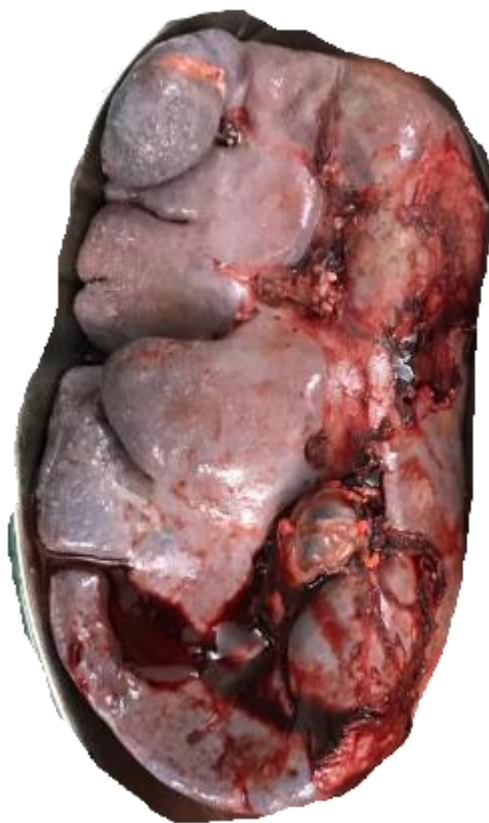


Figure 2 shows ruptured spleen

In post-operative period platelet count was raised rapidly suggestive of reactive thrombocytosis. This rise ranges from 3 lakh / μ L on day of splenectomy to 1498 K/ μ L on 8th postoperative day (see Table 1). Patient was investigated for common causes of thrombocytosis like myeloproliferative diseases and malignancies. To prevent thrombotic events low molecular weight heparin and aspirin was prescribed. Post-operative period was uneventful. Thrombocytosis gradually declined to 500 k/ μ L on post-operative day 15. Low molecular weight heparin was discontinued but ask him to take aspirin for 3 months.

Table 1

Platelet count in post-operative period after spleen removal

parameter	On admission	Post-operative period							
		1	3	5	8	10	12	13	15
Platelet count K/ μ L	240	300	500	799	1498	1407	769	638	500

At follow-up after six months, the patient's complete blood count along with platelets were fortunately normal without any adverse thrombotic or cardiac event. He continues with

his pneumococcal meningococcal vaccinations as per protocol. Supplementation of cytotoxic drugs like hydroxy urea or anagrelide not required in this case.

Discussion

Raise platelet count is a known event due to infection, trauma, or post-operative status. The thrombocyte count in response to such event usually normalised when the underline cause treated. Secondary aetiology of a raised thrombocyte count like myeloproliferative disorders or occult cancer needs to be found out in such cases¹. In one study done by Tefferi A et al², it was observed that primary thrombocytosis present in 20% and most of cases have reactive thrombocytosis.

Extreme thrombocytosis means platelet count $>10 \times 10^9/\mu\text{L}$, reactive thrombocytosis is a commonest cause. In study done by Buss D.H. et al³, including 280 participants, reactive thrombocytosis was observed in more than 81% and myeloproliferative disorder in approximately 15% and post-splenectomy status was found to be aetiologies of extreme reactive thrombocytosis.

Essential thrombocytosis is defined as the increased levels of platelets not due to myeloproliferative disorders and platelets more than 6 lakhs/ μL , along with bone marrow biopsy showing megakaryocytic hyperplasia⁴.

Reactive thrombocytosis is considered due to thought to result excess production more than of one thrombopoietic elements lead to stimulation of megakaryocytes out of all these elements interleukin (IL)-6 plays basic stimulator in reactive thrombocytosis⁵ platelet regulation is very important function of the spleen, platelets mainly catabolised in a spleen hence raised levels of it observed in hyposplenism. Thrombocytosis is an acceptable situation after spleen removal⁶. Palwasha N et al¹ in his case report presented with a case of extreme thrombocytosis was as a result of combination of multiple factors. Not only post splenectomy status but also have vitamin B12 deficiency and anaemia were precipitated the event.

In his study of Santhosh-Kumar CR et al⁵ around 776 patients were having thrombocytosis with platelet count more than 5 lakh evaluated to know its cause. The most common aetiology was infection in 22%, rebound thrombocytosis in 20%, tissue trauma in 18%, chronic inflammatory disease for 13% and cancer in 6% of patients. Thrombocytosis due to number of aetiologies in same patient observed in 5.9 % of study participants. Platelet count more than 10 lakhs may be due to myeloproliferative disorders, or after spleen removal^{6,7,8}. Few of the related studies were reported by Mohammad et. al.⁹, Walinjkar et. al.¹⁰, Gupta et. al.¹¹ and Abbafati et. al.¹². Studies on hepatic disorders¹³, work related morbidities¹⁴ and obstetric care¹⁵ related to effects on overall blood picture were reviewed.

Conclusion

Splenectomy was is a very common cause of thrombocytosis. the hyposplenism, could have precipitated extreme thrombocytosis in present case. Our findings support the well-known thrombocytosis post-splenectomy hypothesis and demonstrate the difference in the response of the platelet count by surgical indication. In addition, our findings indicate that patients

with post-splenectomy should be considered to have a different 'normal range' for platelet count than non-splenectomized patients. In testing the findings of this study and better addressing the significance of "abnormal" platelet counts in asplenic patients, a prospective examination with standardised platelet count intervals would be useful.

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