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Does the Absolute Platelet Count Predict Perioperative Bleeding in ITP?

Priyanka Pavithran

Department of Anaesthesiology, Aster MIMS, Mini Bye pass, Govindapuram, Calicut, Kerala, India

Address for Correspondence: Dr Priyanka Pavithran, Consultant, Dept of Anaesthesiology, ASTER MIMS, Calicut. Email: priyanka.pavithran@gmail.com

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Introduction

Immune thrombocytopenic purpura (ITP) is an autoimmune disorder characterised by isolated thrombocytopenia. These patients often present for surgeries and their perioperative management is challenging. Here we describe our experience with a case of chronic ITP presenting for spinal surgery.

Case report

A middle aged lady, who was a known case of chronic Immune thrombocytopenic purpura (ITP) was admitted with a spontaneous spinal epidural haematoma causing acute onset paraparesis. She had no other comorbidities and this was the first episode of significant spontaneous bleed. She had been on azathioprine and prednisolone 10 mg for several years. She was posted for elective decompression and evacuation of haematoma. At presentation her platelet count was 1000/dL which improved to 30,000/dL after intravenous immunoglobulin (IVIg) and methylprednisolone injections. All other laboratory parameters were within normal limits. On the morning of surgery four units of platelet rich plasma were transfused which resulted in a platelet count of 47,000/dL. It was decided to take her up for surgery under cover of a single donor platelet (SDP) transfusion. Under standard monitoring, general anaesthesia was induced with midazolam, fentanyl, propofol and atracurium. She was intubated with a Murphy's endotracheal tube which was well lubricated, with precautions taken to avoid airway trauma. Inj. Tranexamic acid 1 gm was given intravenously at induction. All intramuscular injections were avoided. Intermittent pneumatic compression was initiated. She was positioned prone with well-padded bolsters and a high density foam headrest. Analgesia was supplemented with paracetamol and morphine. The surgery proceeded uneventfully. There was no excessive oozing and the total blood loss was less than 200 ml. The SDP transfusion was started slowly. Postoperative analgesia was maintained with paracetamol and tramadol. On the next day her platelet counts improved to 1×10^5 /dL. Postoperatively her neurologic deficit improved gradually, and she made an uneventful recovery.

Discussion

ITP is an acquired autoimmune disorder where antiplatelet antibodies bind to platelet antigens and cause accelerated platelet destruction. Anaesthetic management of patients with ITP is challenging and is even more difficult when it comes to surgeries on closed spaces like spine and brain. The recommended platelet count

for performing a neuraxial surgery is a minimum of $1 \times 10^5/\text{dL}$. Improving the platelet count to such levels is not always possible in the event of an emergency surgery. For treatment of severe thrombocytopenia IVIg, methylprednisolone and Thrombopoietin receptor agonists like eltrombopag are given [1]. Platelet transfusions are given only in instances of severe bleeding or for preparation of surgery. Transfused platelets get destroyed and preoperative transfusions must be infused 1-2 hours before surgery. The concept of rebalanced haemostasis in liver disease is well proven [2]. This concept has been adapted to ITP as well. Kim et al, investigated the concept of rebalanced haemostasis and found that ITP patients had normal thromboelastography parameters and an elevated vonWillebrand factor (vWF) levels [3]. This rebalance occurs due to an increase in vWF antigens and decreased vWF protease activity. Studies have shown that thromboelastography can demonstrate a normal coagulation in patients with ITP even when the platelet count is low and can help predict the risk of bleeding [4]. There are reports of thrombotic events occurring in patients with ITP which necessitates perioperative mechanical thromboprophylaxis [5]. A random donor platelet can be expected to raise platelet count by 5000/dL whereas SDP transfusions can raise the platelet count by 30000/dL and helps to decrease exposure to donor antigens [1].

Conclusion

Patients with ITP can present for various surgeries and their perioperative management needs to be worked out on a patient to patient basis. The concept of rebalance of haemostasis has been extended to ITP also. Evidence for this rebalance is the normal parameters obtained on TEG. Point of care tests of coagulation like TEG, rather than absolute platelet counts maybe have more utility in predicting perioperative bleeding in these patients

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