ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 7, Issue – 3, June – 2022 , Page No. : 133 - 138

A case report of Periopeoperative management of immune thrombocytopenic purpura patient with severe thrombocytopenia for splenectomy: An anaesthetic challenge

[1]Tilka V. Ghate, Assistant Professor, Department of Anaesthesiology, N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur.

[2]Heena Pahuja, Associate Professor, Department of Anaesthesiology, N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur.

[3]Anjali Bhure, Professor and Head of department, Department of Anaesthesiology, N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur

[4]Pritamkumar R. Kadam, Resident, Department of Anaesthesiology, N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur

Corresponding Author: Heena Pahuja, Associate Professor, Department of Anaesthesiology, N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur.

Citation this Article: Tilka V. Ghate, Heena Pahuja, Anjali Bhure, Pritamkumar R. Kadam, "A case report of Periopeoperative management of immune thrombocytopenic purpura patient with severe thrombocytopenia for splenectomy : An anaesthetic challenge", IJMSIR- June - 2022, Vol – 7, Issue - 3, P. No. 133 – 138.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

In individuals with ITP, surgical operations carry the risk of serious perioperative period bleeding and infection. When managing a patient with ITP, perioperative care and anaesthesia management provide significant risks and obstacles. This case study reports of a patient for perioperative management of patients of severe refractory chronic ITP who operated with an open splenectomy for refractory thrombocytopenia. The patient presented with platelet count 3000/µL in our institute. The ultrasonography of abdomen & pelvis suggestive of splenomegaly with chest X-ray shows both sided pleural effusion with left lower zone lung consolidation.

An elective open splenectomy procedure was done on the patient. On postoperative Day-1 it showed an increase in platelet counts up to 35000. His medications were continued postoperatively. The patient was followed up postoperatively which showed increasing trend of platelet counts. In patients with severe refractory ITP requiring splenectomy, medical therapy and optimal surgical technique, as well as the timing of platelet transfusion, can reduce the risk of life-threatening intra- or post-operative complications.

Keywords: Case report, severe refractory chronic ITP, splenectomy, perioperative care, anaesthesia management

Introduction

ITP is an auto-immune illness having a chronically low platelet count that is resistant to therapy. In individuals with ITP, surgical operations carry the risk of serious perioperative period bleeding and infection [(1)]. When

managing a patient with ITP, perioperative care and anaesthesia management provide significant risks and obstacles.

Splenectomy is second-line treatment in adults, remains provides the highest cure rate.[5] Splenectomy is invasive, irreversible, associated with postoperative complications with its outcome unpredictable. Here we are reporting a case of severe refractory chronic ITP who had an open splenectomy for refractory thrombocytopenia. Atraumatic airway management, adequate platelet transfusion and hemodynamic and coagulation profile monitoring are some of the most important peri-operative concerns in a ITP.[2] Also the successful outcome of the case depends on multi-disciplinary team approach.

Patient information

A young male patient, weight-65 Kg, 22-year male patient, BMI 25.8, labourer by occupation, diagnosed case of idiopathic thrombocytopenic purpura was planned for elective open splenectomy. Patient become symptomatic for the first time in March 2021 and presented with spontaneous nasal bleed, multiple peticheal haemorrhages all over body and severe episode of headache which was managed conservatively by local doctors. After 10 days he developed seizures for which MRI brain was done which showed subdural haematoma with subarachnoid bleed. Patient's GCS was 15/15. His blood investigations showed haemoglobin levels of 8.9 gm% and platelet counts 19,000 /µl. At that time patient received injection Methylprednisolone 500 mg in 100 ml normal saline for three days along with 5 pints of platelet-rich plasma (PRP) and 1 pint of single donor platelets (SDP).

After three days patient was discharged on Tab.Omnacortil 20 mg BD and Tab.Lancosamide 200 mg BD and was referred to a haematologist for low platelet count. At the time of discharge patient platelet counts were 70,000 /µl. The haematologist diagnosed it as a case of ITP on the basis of bone marrow aspiration study, physical findings and history. He continued steroids to which patient developed maculopapular eruptions so Tab.Omnacortil dose was reduced to 10mg BD. Addition of Tab.Azathiprine 50mg OD for two weeks and Tab.Romiplostin 250µg SC once a week was considered, but no response was noted in platelet count. Platelet count further decreased to 15000/µl and patient complains of intermittent petichae, so haematologist further added Tab.Dexa 40mg OD and Tab. Eltrimboag for 20days.Platelet count increased but not more than 30000/µl. Trial of monoclonal antibody like Tab. Rituximab and Tab.Dapasone 100mg was given with no response in rise of platelet counts.

As no response was noted to any treatment haematologist discontinued all medications except Tab.Omnacortil 10mg BD and Tab.Lancosamide 100mg BD and referred to our institute for splenectomy as the last resort. He received total 14 platelets rich plasma (PRP) and 3 SDP transfusions from March 2021 to October 2021.Patient first came to our institute on 25th October 2021. His platelet counts were 15000/µl, Hb 14.3 gm%, to rule out fresh intracranial bleed. The CT brain was done which showed old gliotic changes, rest investigations were within normal limit. The patient was planned for surgery on 2nd November 2021.

Clinical findings

On examination general condition was fair, vitals stable, presented with spontaneous nasal bleed, multiple peticheal haemorrhages all over body and severe episode of headache and systemic examinations were normal.

Diagnostic Intervention

One day prior to surgery his platelets counts were 3000/ul. To rule out fresh intracranial bleed, CT brain was done which showed old gliotic changes. His Bone marrow picture showed megakaryopoiesis s/o ITP changes. USG Abdo+ pelvis showed Splenomegaly and Chest X-ray showing mild both sided pleural effusion with left lower zone lung consolidation. Rest other investigations were within normal limit.

Differential diagnosis

Myelodysplastic syndrome, Thrombotic thrombocytopenic purpura, Haemolytic uremic syndrome, DIC, Drug induced thrombocytopenia

Therapeutic intervention

Steroids and antiepileptic (Tab Lancosamide) were continued till the day of surgery and 2 single donor platelets were transfused a day before surgery. His repeat platelet counts were 1000/ul and Hb was 9.5 gm% on the day of surgery. Before proceeding for surgery patient received 4 RDP with the aim to increase the platelet counts to 10,000/ul and 2 units of SDP were kept ready for intra-operative transfusion after clamping of splenic artery.

Considering that patient did not respond well during the previous transfusion, the condition was explained to the patient and his close relatives and it was jointly decided to proceed with splenectomy with a very high risk for surgery. Our plan was general Anaesthesia with endotracheal Intubation. Two wide bore IV cannulae were secured. The patient was preloaded with 15 ml/kg IV crystalloid. A CVP line was arranged for emergency situation. Syringe pumps with attached vasopressors & inotropes were kept on standby anticipating intraoperative bleeding. It was planned to handle the airway during intubation with minimal attempt to reduce airway trauma and bleeding. Patient received IV Hydrocortisone 100mg, Pantoprazole 40 mg, Ondansetron 4 mg, and Tranexamic Acid 1 gm preoperatively. Standard monitoring devices were attached. The patient was pre-medicated with IV Midazolam 1 mg, Fentanyl 100ug, Glycopyrrolate 0.2 mg. The patient was pre-oxygenated with 100% O2 and induced with IV Propofol 100 mg and Succinylcholine100 mg. Gentle laryngoscopy was done by senior anaesthesiologist using Videolaryngoscope and oral cavity and cords were sprayed by lignocaine 10% spray to reduce stress response of Laryngoscopy and intubation.

Anesthesia was maintained on Isoflurane, O2:N2o (50:50), Dexmedetomidine infusion and intermittent dose of Vecuronium. IV Fentanyl was given for analgesia. Once the splenic major vessels were clamped and ligated, 2 units of SDP transfusion were started. 1unit PRC was also given. Intraoperative period was uneventful with blood loss of up to 1000 ml. The patient was extubated after adequate neuromuscular recovery. Total duration for surgery was 3hrs. The Postoperative analgesia was managed with IV Tramadol twice a day. Blood investigations were sent on postoperative day-1 which showed an increase in platelet counts up to 35000. His medications were continued postoperatively. The patient was followed up postoperatively which showed increasing trend of platelet counts and was discharged on 7th postoperative day and advised to keep a follow up with the hematologist.

Discussion

Although an international working group recommended adopting the word "idiopathic thrombocytopenic purpura" instead of "idiopathic thrombocytopenic purpura" to highlight the importance of the underlying

immunological mechanism, we have stuck with "ITP" because many of us are familiar with it. ITP is characterised by the destruction of opsonized platelets in spleen. [3]first-line treatment in ITP are medical care, which comprises corticosteroids, IV Immunoglobulins, anti-Rh D antibodies, Rituximab, Danazol, Cyclophosphamide, and Azathioprine. [4] Splenectomy is normally regarded a last resort in individuals who are not responding to steroids or who recur with such initial response to therapeutic treatment. [3] Splenectomy is a surgical operation that may only be performed on ITP patients.

According to Ghanima et al. [5] splenectomy to be delayed by 12 months after diagnosis to allow for the possibility of spontaneous remission. In recently diagnosed or persistent ITP patients, however, failure to respond to medical therapy and the danger of severe bleeding may prompt splenectomy. Our patient had just developed severe thrombocytopenia that was unresponsive to steroids, immunomodulators, and several platelet transfusions, thus surgery was chosen as a treatment option. According to research, 80 % of patients react to splenectomy, and in sixty six percent of cases, the response is durable, requiring no further therapy for at least 5 years. [5] Laparoscopic splenectomy has gotten a lot of attention since it was first introduced as a treatment for ITP. ITP was found to be the most common reason for laparoscopic splenectomy surgery in numerous studies published in the literature. [6]Lower haemorrhage, morbidity, and death are all linked to laparoscopic surgery. [7, 10] The laparoscopic method allows for thorough visibility of potential spleen locations, which reduces the risk of recurrence. [6] As a result, the laparoscopic approach is considered to be the gold for splenectomy in patients of Idiopathic ITP, particularly in patients who are not respondind for medical treatment, but there is limited reports of the safety and feasibility of laparoscopic splenectomy in patients with very severe thrombocytopenia. Patients with low platelet levels have had laparoscopic splenectomy. However, the optimal platelet count, as well as the requirement for and scheduling of platelet transfusion during laparoscopic splenectomy, are unknown. [8,9] Many writers have reported that laparoscopic splenectomy takes longer than open splenectomy. Intraoperatively, a decrease in significant blood loss has been noted as surgeons gain more experience with open splenectomy. [11,12] In our circumstance, the surgeons preferred an open splenectomy. It's debatable if platelet transfusion is necessary and when it should be done in ITP patients who require splenectomy. In individuals with ITP, around transfused platelets 1/3 are trapped in the splenic pool,and gets degraded ,their survival time is reduced from 2-3 days to a few minutes. Since platelets are immunologically eliminated within the spleen, platelet transfusion has little usefulness in a normal spleen. Because platelets are a scarce,transfusion can lead to alloimmunization, pathogen transmission, hypersensitivity, thromboembolic complications,transfusion-related acute lung injury.

Over the last four decades, it is standard practise of, transfuse platelets to significantly thrombocytopenic sufferers as a supportive therapy to prevent perioperative bleeding caused by a low platelet count,it is a source of concern for both the surgeon and the anaesthesiologist. In patients with a platelet count below 10,000/l, BCSH [15] recommends platelet transfusion after splenic artery ligation. A similar recommendation was made by the American Society of Hematology. [15] Yoneoka et al.

reported a successful emergency Laparoscopic splenectomy with constant platelet transfusion with rate 2 units/hr for a patient whose platelet count was below the detectable limit. [16]

However, some authors claimed that perioperative platelet transfusions were ineffective in ITP having extremely low platelet counts. Many cases of ITP undergoing cardiovascular surgery, cancer surgery, major orthopaedic surgery, and even laparoscopic splenectomy have been reported, but to our understanding, no case report of severe thrombocytopenia with platelet counts of 1000/ul is present in the literature with no specific guidelines for the anaesthetic managing patients have been issued. [1] Airway bleeding from intubation trauma and intracranial haemorrhage from stress reactions to laryngoscopy and intubation for the context of very low platelet counts are major causes of morbidity and mortality [17], and platelet transfusion following artery ligation does not address this serious concern. It's difficult to form a definite conclusion of safe limit of platelet count for laryngoscopy and endotracheal intubation due to a lack of evidence. We decided to proceed with platelet transfusion 4 RDP units preoperatively right before the surgery because our patient's platelet count was 1000/l. Also, while laryngoscopy for tracheal intubation, precautions were made to reduce stress to the upper airway. Because of the risk of hematoma and associated neurological problems, our patient was not given a neuraxial anaesthesia. ASA standard monitors were used to provide meticulous hemodynamic monitoring. [18] TEG monitoring is useful in determining whether or not to transfuse platelets or other clotting factors, however it was not available in our scenario.

Intraoperatively, 2 SDP units and 1 PRC unit were transfused. Perioperative platelet transfusion, well-planned general anaesthetic, avoidance of airway trauma, monitoring of hemorrhagic complications, good bleeding control, and blood loss replenishment all contributed to our patients' successful care and led to positive perioperative outcomes.

Patient perspective

I came to casualty with bleeding from my nose and reddish spots on my skin, i was admitted under surgery department and was told that my platelets are very less in numbers and my spleen was enlarged. Accordingly I was operated after investigations and spleen was removed surgically. Later I became very much stable and could live a normal life.

Consent: Informed written consent was taken.

Ethical clearance: From the Institutional Ethical Committee.

Author contributorship: All the authors have equally contributed for article.

References

1. Singhal R, Gudimetla V, Stewart A, Luscombe KL, Charalambous CP. Perioperative care of a patient with refractory idiopathic thrombocytopenic purpura undergoing total knee arthroplasty. Knee SurgRelat Res 2012;24(4):245–8.

2. Mishra P, Verma S. Peri-Operative Management in a Case of Idiopathic Thrombocytopenic Purpura - A Case Report. 2021;3.

3. Gupta S, Kalayarasan R, Chandrasekar S, Gnanasekaran S, Pottakkat B. Laparoscopic Splenectomy for Immune Thrombocytopenic Purpura (ITP) Patients with Very Severe Thrombocytopenia. Indian J Hematol Blood Transfus 2018;34(3):535–9.

4. Samson M, Fraser W, Lebowitz D. Treatments for Primary Immune Thrombocytopenia: A Review. Cureus 11(10):e5849.

5. Ghanima W, Godeau B, Cines DB, Bussel JB. How I treat immune thrombocytopenia: the choice between splenectomy or medical therapy as a second-line treatment. Blood 2012;120(5):960–969.

6. Vecchio R, Cacciola E, Lipari G, Privitera V, Polino C, Cacciola R. Laparoscopic Splenectomy Reduces the Need for Platelet Transfusion in Patients With Idiopathic Thrombocytopenic Purpura. JSLS 2005;9(4):415–8.

7. Silecchia G, Boru CE, Fantini A, Raparelli L, Greco F, Rizzello M, et al. Laparoscopic Splenectomy in the Management of Benign and Malignant Hematologic Diseases. JSLS 2006;10(2):199–205.

8. Saleh MN, Fisher M, Grotzinger KM. Analysis of the impact and burden of illness of adult chronic ITP in the US. Curr Med Res Opin 2009;25(12):2961–9.

9. Cortelazzo S, Finazzi G, Buell M, Molteni A, Viero P, Barbui T. High risk of severe bleeding in aged patients with chronic idiopathic thrombocytopenic purpura. Blood 1991;77(1):31–3.

10. Cai Y, Liu X, Peng B. Should we routinely transfuse platelet for immune thrombocytopenia patients with platelet count less than 10×10^9/L who underwent laparoscopic splenectomy? World J Surg 2014;38(9):2267–72.

11. Qu Y, Xu J, Jiao C, Cheng Z, Ren S. Long-Term Outcomes of Laparoscopic Splenectomy Versus Open Splenectomy for Idiopathic Thrombocytopenic Purpura. Int Surg 2014;99(3):286–90.

12. Winslow ER, Brunt LM. Perioperative outcomes of laparoscopic versus open splenectomy: a meta-analysis with an emphasis on complications. Surgery 2003;134(4):647–53; discussion 654-655.

13. Chen X, Peng B, Cai Y, Zhou J, Wang Y, Wu Z, et al. Laparoscopic splenectomy for patients with immune thrombocytopenia and very low platelet count: is platelet transfusion necessary? J Surg Res 2011;170(2):e225-232.

14. George JN, Woolf SH, Raskob GE, Wasser JS, Aledort LM, Ballem PJ, et al. Idiopathic thrombocytopenic purpura: a practice guideline developed by explicit methods for the American Society of Hematology. Blood 1996;88(1):3–40.

15. British Committee for Standards in Haematology General Haematology Task Force. Guidelines for the investigation and management of idiopathic thrombocytopenic purpura in adults, children, and in pregnancy. Br J Haematol 2003;120(4):574–96.

16. Urban C, Lackner H, Sovinz P, Benesch M, Schwinger W, Dornbusch H, et al. Successful unrelated cord blood transplantation in a 7-year-old boy with Evans syndrome refractory to immunosuppression and double autologous stem cell transplantation. Eur J Haematol2006;76:526–30.

17. Sadowitz D, Terndrup TE. Subglottic airway hemorrhage associated with idiopathic thrombocytopenic purpura. Ann Emerg Med 1994;23(3):591–5.

18. Daabiss M. American Society of Anaesthesiologists physical status classification. Indian J Anaesth 2011;55(2):111–5.