

Anesthetic management of ruptured ectopic pregnancy in immune thrombocytopenic purpura patient: a case report

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Bleeding in patients with low platelet counts is an important anesthetic challenge. We report a case of a 22-year-old woman who presented with a ruptured extrauterine pregnancy. The patient was a known case of immune thrombocytopenic purpura and she was on treatment with steroids. Her Hb was 6 g/dl and platelet count was 5000/ml. The postoperative period was uneventful and the patient was discharged 8 days after surgery. Here, we discuss the management and outcome of this rare presentation performed successfully under general anesthesia without the use of intravenous immunoglobulin that is an important agent for preoperative management of a planned surgical procedure for immune thrombocytopenic purpura patient to increase platelet count. The duration of surgery was 1 h. Hemostasis was achieved in this period as well.

Keywords:

extrauterine pregnancy, hemostasis, immune thrombocytopenic purpura, laparotomy, salpingectomy

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Introduction

Platelet counts are usually lower in pregnant than in nonpregnant women. Immune thrombocytopenic purpura (ITP) is characterized by thrombocytopenia of unknown origin [1,2]. This gestational thrombocytopenia is caused by a combination of hemodilution and increased platelet activation and clearance. Women with previously diagnosed ITP may experience exacerbation or relapse [3]. Corticosteroids are the standard initial treatment. In addition, they may also reduce bleeding, independent of the platelet count rise by means of a direct effect on blood vessels.

In patients with ITP undergoing surgery, bleeding associated with low preoperative platelet count can lead to uncontrolled bleeding [4]. When the preoperative platelet count is less than 50 000/ml, intensive perioperative management should be planned to avoid platelet depletion. Although intensive medical treatment using intravenous immunoglobulin (IVIG) has been preoperatively administered to patients with low platelet counts, platelet counts have not increased to satisfactory levels in some patients. Moreover, some studies have found that emergency surgery for patients with less than 50 000/ml platelets was successful without the administration of preoperative IVIG [5].

Here, we report the case of a patient with thrombocytopenia due to ITP who underwent laparotomy for ruptured ectopic pregnancy without receiving preoperative IVIG therapy. The positive

outcome of this case suggests that preoperative IVIG therapy is not always required for the management of surgical treatment in patients with ITP.

Case report

A 22-year-old gravida 1 presented to the emergency department with a history of severe abdominal pain and 8-week amenorrhea. She was a known case of ITP and was on treatment of corticosteroids orally. A bedside ultrasound performed by the obstetrician showed a suspected extrauterine ectopic pregnancy in the fallopian tube. The patient was scheduled for an emergency exploratory laparotomy.

On preanesthetic evaluation, we found that the patient was clinically pale, 155 cm tall, and weighed 45 kg. Her blood pressure was 93/63 mmHg, heart rate was 145/min, and Mallampati grade was II. Preoperative laboratory workup revealed anemia (Hb = 6 g/dl), and platelet count was 5000/ml.

General anesthesia was planned for the exploratory laparotomy. Informed consent was obtained after the risks of extensive bleeding, possible blood

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transfusion, and splenectomy were explained to the patient. Two 18-G intravenous lines were inserted without any bleeding, and platelet and packed red blood cell transfusion was started preoperatively. In the operating room, standard American Society of Anesthesiologists (ASA) monitors were applied and 100% oxygen (O₂) was delivered through a face mask. A left radial arterial line was placed for invasive blood pressure monitoring.

An intravenous injection of hydrocortisone 100 mg and dexamethasone 8 mg was given. General anesthesia was induced after premedicating with an intravenous injection of midazolam 0.03 mg/kg, glycopyrrolate 0.005 mg/kg intravenous and fentanyl 2 µg/kg intravenous; induction was carried out with 2 mg/kg ketamine intravenous and 1.5 mg/kg suxamethonium intravenous and intubated with '7.0 mm' size cuffed PVC endotracheal tube. The patient was maintained on N₂O : O₂ = 60 : 40, injection atracurium and isoflurane 0.4 vol%.

On laparotomy, 1 l of dark-colored blood from the peritoneal cavity was drained. There was a ruptured right tubal pregnancy in the ampullary region; right salpingectomy was performed. Tranexamic acid was used 10 mg/kg body weight intravenously as symptomatically.

There was a sudden fall of blood pressure after removal of blood (70/46 mmHg), which was managed with intravenous fluid, hydroxyl ethyl starch, blood, and dopamine support. Packed red cells (7 U), platelets (12 U), and fresh frozen plasma (7 U) were infused during anesthesia.

Intraoperatively, vitals were within normal limits. Postoperatively, the patient was shifted to the ICU with endotracheal tube *in situ*, as it was decided to electively ventilate the patient with the following vital signs: blood pressure 102/70 mmHg; pulse 92/min; respiratory rate 16/min; and O₂ saturation 99%. There was no bleeding postoperatively.

Postoperatively, the Hb was 7 g/dl, platelet count was 4000/ml, prothrombin time (PT)-international normalized ratio (INR) increased to 1.8, the fibrin degradation product (FDP) increased to 14.5 µg/ml, and fibrinogen was 237 mg/dl. IVIG treatment (20 g/day for 5 days) plus platelet transfusions were begun to treat the patient's ITP, and plasma transfusions were administered for her disseminated intravascular coagulopathy (DIC). The following day, the platelet count increased to 3500/ml and her coagulation parameters improved. On the third postoperative day, her platelet count was 11 000/ml and the coagulation

factors had returned to normal levels. The patient subsequently made uneventful recovery and she was discharged 8 days after surgery.

Discussion

An ectopic pregnancy is a complication of pregnancy in which the embryo implants outside the uterine cavity [6]. Furthermore, they are dangerous for the mother, as internal hemorrhage is a life-threatening complication. An ectopic pregnancy is a potential medical emergency, and, if not treated properly, can lead to death.

Pregnancy is associated with a procoagulant state due to increased levels of fibrinogen, factor VIII, and von Willebrand factor, suppressed fibrinolysis, and a reduction in the activity of protein S. These changes may result in fewer bleeding symptoms and therefore a greater tolerance to ITP in pregnant compared with nonpregnant women [7].

The mean platelet volume of ITP patients increases as the platelet count decreases, and the larger platelets are assumed to be younger and more reactive. The survival time of transfused platelets is short, but the increase in platelet count can be expected to last for around 1 week following immunoglobulin infusion. Therefore, IVIG is an important agent for the preoperative management of a planned surgical procedure. We choose to administer IVIG not as preoperative, but as a postoperative therapy for our patient. This treatment enabled us to perform emergency surgery and achieve a good postoperative course.

Although the duration of hemostatic levels following transfusion is not long enough to be beneficial to ITP patients because of rapid destruction of the transfused platelets, an immediate increase in the platelet count can be achieved. A rapid increase in platelet count is important for emergency surgical operations. Some studies have demonstrated that platelet transfusions can allow successful emergency surgeries for patients with ITP without the administration of preoperative IVIG [5]. IVIG is an important agent for the preoperative management of a planned surgical procedure. However, this treatment is not always effective and a significant increase in the platelet count is usually not achieved until 2–3 days following initiation of treatment [8].

Our patient received 12 platelet concentrates, 7 U packed red cells and platelets, and 7 U fresh frozen plasma during surgery. With this protocol, we were able to control bleeding during surgery.

Conclusion

We believe that platelet transfusions are necessary for the preoperative management of emergency surgical treatment for patients with thrombocytopenia, and that IVIG therapy is not always required for preoperative management. IVIG therapy seems to be suitable for postoperative management of emergency surgery in patients with ITP.

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Conflicts of interest

There are no conflicts of interest.

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