ORIGINAL RESEARCH PAPER

Anaesthesiology

KEY WORDS:

ANESTHESIA CONSIDERATIONS IN A CASE OF PRIMIGRAVIDA WITH GIANT PLATELETS POSTED FOR ELECTIVE LOWER SEGMENT CAESAREAN SECTION UNDER ANESTHESIA.

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INTRODUCTION:

Giant platelets are abnormally large blood cells involved in clotting. While a normal platelet is about 2-4 micrometers in diameter, giant platelets exceed 7 micrometers often growing as large as or larger than a red blood cell[1]. It indicates that your bone marrow is healthy and responding properly to a low platelet count. In some cases oversized platelets are caused by rare genetic mutations. These conditions can alter how the platelet function, potentially causing a mild to severe tendency to bruise easily or experience abnormal bleeding. Examples include Bernard- Soulier syndrome, May-Hegglin anomaly, and Gray platelet syndrome[1,2]. If sufficient number of giant platelets are present, the automated platelet count may be falsely decreased.

CASE REPORT:

A-29-year-old primigravida patient was posted for emergency lower segment caesarean section. The indication was failure of induction of labor. There was no history of antenatal hemorrhage or any spontaneous bleeding tendency, easy bruising, petechiae, gum, nasal or mucosal bleeds or any previous requirement for transfusion. As patient's complete blood count was normal, but platelet count was 1,45,000/cu mm, and peripheral blood smear showed giant platelets. Her other preoperative investigations were within normal limits. Hence it was decided that spinal anesthesia will be given. Two ml of 0.5% bupivacaine was administered intrathecally. The sensory level of anesthesia was achieved till T6 level. Vital parameters were monitored throughout surgery and were within normal range. Baby was delivered and uterine tone and bleeding was controlled with pitocin 10 units. There was no excessive uterine bleeding noticed. About 300 cc of blood loss was managed by crystalloid administration. The rest of the course of caesarean section was uneventful. One platelet bag and fresh frozen plasma was kept ready in view of anticipated bleeding, but was not required.

DISCUSSION:

Large platelets have diameter >4 micron, and criteria for giant platelets is diameter >7 micron. Giant platelets are functionally abnormal platelets causing risk of bleeding diasthesis. Bernard- Soulier syndrome is a rare inherited blood clotting disorder characterized by giant platelets and prolonged bleeding time. For safe neuraxial techniques without any complications, a platelet count of >80000/cmm is generally considered safe. Regional anesthesia has the advantage of avoidance of airway complications. Prophylactic platelet transfusions may play a role if platelet count is <80000/cmm and with abnormal morphology like this case as giant platelets. General anesthesia is the technique of choice when platelet count is lower than 50000/cmm. if there is active bleeding and/or failed regional anesthesia. The primary goals are to assess bleeding risk, evaluate platelet functionality and prevent life threatening complications like spinal hematoma or hemorrhage. Preoperative assessment should be done to confirm the diagnosis. Bernard-Soulier syndrome presents with significant thrombocytopenia while others like Harris platelet syndrome have normal platelet counts and mild or no bleeding. A hematological evaluation including platelet aggregation studies are highly recommended to assess severity of defect. Assessment for MYH-9 related diseases can feature renal impairments or hepatic involvement[3,4].

In conditions like giant platelet syndrome (GPS) or MYH-9 related disorders like May-Hegglin anomaly or Grey platelet syndrome, management plan should involve thorough peripheral blood smear examination and focusing on minimizing bleeding risks and preventing platelet aggregation. Patients often present with abnormally large platelets but normal functional counts while some inherited disorders like Glanzmann thrombasthenia present with poor function. Bleeding history of easy bruising, epistaxis or prior surgical bleeding should be asked. Selection of anesthesia technique is important. Regional anesthesia is the preferred technique. Society of obstetric anesthesia and perinatology (SOAP) Consensus Guidelines suggest that a platelet count of 70000/cmm or more is safe for neuraxial blockades provided platelet function is normal in such cases[5,6].

If platelet count is below this threshold, regional anesthesia may carry a risk of epidural or spinal hematoma. General anesthesia is indicated for emergency cesarian section. Intubation must be handled with extreme care to avoid laryngeal bleeding and nasal intubation should be strictly avoided. Preoperative prophylactic platelet transfusions may be required if counts are critically low and bleeding is anticipated. Planning for early intravenous long peripheral access to avoid repeated traumatic punctures. Avoidance of drugs which will impair platelet aggregation is necessary. Nonsteroidal anti-inflammatory drugs (NSAID) and intramuscular injections should be avoided. Tranexamic acid can be given In the perioperative period. Both mother and baby require close clinical monitoring for delayed or unexpected hemorrhages in the postpartum period. For pain control, alternative pain relief methods like paracetamol will be prioritized over NSAIDS.

In this case, as platelet count was within normal limits, regional anesthesia in the form of spinal anesthesia was preferred. Bupivacaine in dose of 2.2 ml of 0.5% was administered in L3-L4 space and level of sensory anesthesia was maintained up to T6 level. Tranexamic acid was kept ready and was used prophylactically after delivery of the baby to reduce blood loss, in the dose of 500 mg slow intravenous as a bolus dose. NSAIDs and intramuscular injections were avoided. There are many case reports in the literature where successful spinal anesthesia was administered with platelet counts between 50000-60000, while general anesthesia was administered once counts are less than 50000.

General anesthesia if chosen as a technique of choice then will be given as per balanced anesthesia. Anesthesia technique with rapid sequence induction should be used in these patients. Premedication with glycopyrrolate, ondansetron, midazolam, fentanyl; induction with propofol

and succinylcholine, maintenance with vecuronium, and reversal with neostigmine in the standard doses should be used.

The choice of anesthesia depends heavily on the platelet count, the severity of the functional disorder and the urgency of the caesarean section in obstetric cases. A multidisciplinary team of obstetricians, anesthesiologists and hematologists should manage these patients. Regional anesthesia can be considered safe if there is no history of bleeding tendency and coagulation parameters are within normal limits. There are very few case reports mentioned in the literature with giant platelets mostly due to MH anomaly where safe anesthesia was administered. One review article mentions cases of normal vaginal deliveries conducted without complications. Another review of literature mentions that May-Hegglin anomaly (MHA) is an autosomal dominant hematological disorder that is commonly misdiagnosed as idiopathic thrombocytopenic purpura (ITP). The presence of leucocyte inclusion bodies differentiates it from other causes of thrombocytopenia. The authors performed a systematic search of the literature on MHA and discussed the anesthetic concerns of the anesthetic, obstetric and pediatric teams. They found 96 pregnancies by 56 mothers with MHA and 51% of these pregnancies were via vaginal delivery and 43.8% were delivered via caesarean sections. About 85.4% pregnancies had an uneventful delivery. Only one patient in the postpartum hemorrhage group was considered likely to be attributed to MHA. None of the mothers who received neuraxial anesthesia in this series experienced any epidural/spinal hematoma. None of the fetal complications were noted to be associated with MHA. The literature suggests that mothers with MHA have an uneventful delivery via all methods[3-6].

The definitive diagnosis of MHA is limited to those with leucocyte inclusion bodies in leucocytes and not the platelets. Despite the recognition as a genetic disorder associated with a specific gene mutation, there is still lack of consensus on the optimal perioperative management for patients with MHA undergoing surgery. A case report mentions a patient of MHA who underwent elective cesarian section under general anesthesia with prophylactic platelet transfusion and tranexamic acid before induction[7]. The literature is insufficient to assess whether a routine platelet count can predict anesthesia related complications in uncomplicated patients. Within the guideline, 77% of anesthesiologists agreed that ordering platelets should be individualized and based on patient history, physical examination and clinical signs[7].

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