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Case Report

Immune (idiopathic) thrombocytopenic purpura with COVID-19 infection diagnosed in pregnancy and management: a case report

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ABSTRACT

Immune (idiopathic) thrombocytopenic purpura (ITP), an autoimmune disease characterized by destruction of platelets, is a hematological disorder that can present in both pregnant and non-pregnant patients. It can occur in any trimester but generally, platelet counts start to decline in early pregnancy and continue to decline until delivery. Unlike most pregnancy-related thrombocytopenia, which is usually mild, ITP can have devastating consequences for mother, fetus, and neonate. It is a diagnosis of exclusion, and management should be based on a multidisciplinary care approach. ITP in pregnancy requires careful monitoring and may need treatment to improve platelet counts before delivery. Corticosteroid is the most commonly used first-line therapy to stop further destruction of platelets. Here, we report a case of a 26-year-old multigravida with gestational age of 24 weeks, diagnosed with ITP during routine antenatal check-up. Patient was managed with various treatment combinations consisting of platelet transfusion, steroids and intravenous immunoglobulin (IVIG) to reach the optimal platelet level. The aim of the study was to provide guidance on how to manage a patient with ITP throughout pregnancy

Keywords: Immune thrombocytopenic purpura, Idiopathic thrombocytopenic purpura, Pregnancy, Management

INTRODUCTION

The prevalence of thrombocytopenia in pregnancy is between 7% and 12% of all pregnant women.[1] Among women with thrombocytopenia in pregnancy, approximately 1% to 4% of them have primary immune thrombocytopenic purpura (ITP).[2] There are many causes of thrombocytopenia in pregnancy. Some of them are unique to pregnancy, such as gestational thrombocytopenia, preeclampsia, and HELLP (hemolysis, elevated liver function tests, low platelets) syndrome, whereas there are other causes of thrombocytopenia in pregnancy that may also occur in non-pregnant conditions such as immune thrombocytopenic purpura (ITP), systemic lupus erythematosus (SLE), antiphospholipid antibodies syndrome (APLA), or bone marrow dysfunction. Maternal concerns with ITP relate to bleeding risks particularly at the time of delivery. Fetal concerns relate to maternal antiplatelet antibodies crossing the placenta causing neonatal thrombocytopenia with a risk of cerebral hemorrhage.

We reported a case of a pregnant woman diagnosed with ITP and the subsequent management and successful delivery.

CASE REPORT

A 26-year-old multigravida G3P2L2 twice previous cesarean section with amenorrhea of 24 weeks came to

outpatient department for routine antenatal check-up. Her last menstrual period was on 28th August 2021 and her expected date of delivery was on 4th June 2022.

Our patient had no past medical history and on her routine blood tests, Hb 8.4 g/dl and platelet of 60,000 cells/µl were detected. Therefore, further investigations were sent. Peripheral blood smear showed microcytic hypochromic anemia with relative neutrophilia and moderate thrombocytopenia. Immature Platelet Fraction was elevated (13.1%). All other tests to rule out causes of thrombocytopenia such as dengue, coombs direct test and lactate dehydrogenase (LDH) level was negative. Her blood pressure was normal and there was no evidence of proteinuria. Her baseline liver function, renal function, thyroid function, coagulation screenings were within normal limits. Screening tests for hepatitis B, hepatitis C and HIV were all negative. Serum iron profile was normal. Therefore, patient was admitted for bone marrow aspiration. Under all sterile conditions and under local anesthesia Bone marrow aspiration from sternum was done which showed normocellular marrow with increased megakaryocytes and absent marrow iron stores. Overall the diagnosis was in favor of immune thrombocytopenia. Patient was started on oral prednisolone 40 mg once daily for ITP management and was advised to do regular monthly antenatal checkup for follow-up.

Patient was planned for elective cesarean section on 39th week of gestation in view of previous twice cesarean section but unfortunately 2 days before her planned operation, she came with history of severe cough with mild shortness of breath for 10 days, for which she was admitted. On laboratory investigation, the patient found out to be positive to truenat COVID-19 real time RT-PCR with severe thrombocytopenia (platelet was 25000/mm^3). The patient was on regular Tab prednisolone 40 mg once daily which was continued. She was also started on injection amoxicillin+clavulanate 1.2 g 8 hourly, tablet torsemide 10 mg once daily and antitussive. Ultrasound scan showed a normal fetus with an estimated fetal weight of 2.6 kg. On repeat investigation next day, the platelet count had fallen to 3000/mm^3 with raised D-Dimer (2.68 µg/ml), elevated immature platelet fraction (38.7%). 5 units of platelet (random donor platelet) were transfused. Despite treatment and platelet transfusion, platelet counts were in the range of 3-30×10^9/l, and were fluctuating to low levels.

Perioperative and intraoperative period

A joint consultation involving a physician, an obstetrician and an anaesthesiologist was conducted and it was decided to end the pregnancy by caesarean section in view of cesarean scar tenderness with term gestation and increasing resistance to conventional ITP treatment. Her platelet count was 15000/mm^3 preoperatively. High risk consent for LSCS was taken. Chances of postpartum hemorrhage, cesarean hysterectomy and need for massive transfusion were explained. Pre-operative injection methylprednisolone 1 g in 100 ml NS was transfused and patient was shifted to operation theatre. Seven units of platelets were transfused before induction of general anesthesia in OT and 4 unit of platelet was transfused post operation.

Extreme precaution was taken during the operation. Midline incision was made over the previous scar; all the bleeder points were cauterized or ligated. After the delivery of the baby, placenta was removed by controlled cord traction. Uterus was closed in 2 layers and abdomen was closed in layers. Uterus contracted well. There was no PPH. A healthy female child weighing 2750 g was born. Baby cried right after birth. Apgar score was 9 at 1 minute and 10 at 5 min.

Post-operative period

Post-operatively, the patient was kept in the ICU for monitoring. In view of moderate COVID 19 infection, to prevent respiratory failure and severe hypoxaemia patient was kept in mechanical ventilator (SIMV mode) followed by CPAP post operatively for 2 days followed by low flow oxygen for another 2 days.

Saline nebulization 6hrly, blood glucose monitoring 6 hr was done. Patient's pulmonary symptoms improved with all the necessary treatment for COVID-19. Injection IVIG 100 ml (5 g) over 6 hours was infused post-operatively. Oral prednisolone 40 mg once daily was continued throughout the post-operative period. There was no PPH or bleeding episodes from incisions sites. Repeated platelet count on post-operative day 1, 2, 3 and 4 showed platelet count of 30,000/mm^3, 54,000/mm^3, 95,000/mm^3 and 1,18,000/mm^3 respectively. The post-operative period was uneventful and she was discharged by 5th post-operative day. Her platelet count at discharge was 1,18,000/mm^3.

Puerperium: 1-week review

Patient recovered fully with no bleeding episodes or COVID-19 symptoms. Incision wound was healthy therefore stitch removed.

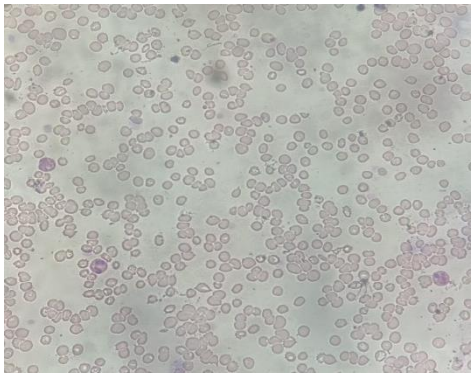

Figure 1: Peripheral smear showing isolated thrombocytopenia (400 magnification, Leishman stain).

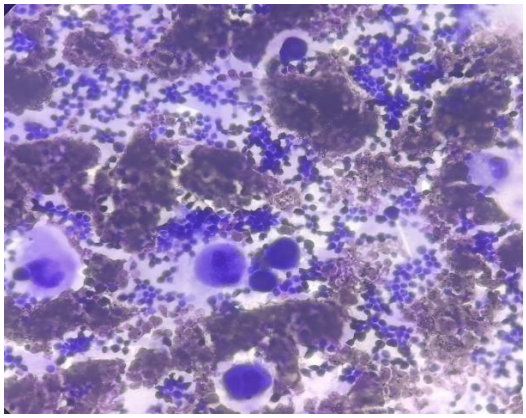

Figure 2: Bone marrow aspiration smears showing increased megakaryocytes some immature forms (400 magnification, Leishman stain).

DISCUSSION

Thrombocytopenia is common and occurs in about 10% of all pregnancies.[4] As ITP is a diagnosis of exclusion, it is therefore wise to consider all causes of thrombocytopenia before making a diagnosis of ITP, as management is different depending on the cause.

In our case, all the common causes had been excluded by performing initial blood investigations and by performing bone marrow biopsy. Generally speaking, thrombocytopenia that occurs in the first or early second trimester or in cases with moderate-to-severe low platelet counts, the patient should be investigated for secondary causes. ITP can only be diagnosed if all other secondary causes are excluded. The management of ITP in pregnancy requires close collaboration between the obstetrician, physician, anesthetist and neonatologist.

Upon diagnosis, the severity of thrombocytopenia should be ascertained, and platelet counts should be increased and stabilized to a safe level in pregnancy, especially during delivery and provision of epidural anesthesia.[3] Treatment should be instituted, if platelets fall to an unsafe low level or if the patient is symptomatic for bleeding. The American Society of Hematology (ASH) and the British Committee for Standards in Hematology (BCSH) - General Hematology Task Force guidelines provide guidance to what is considered as a safe platelet level for delivery and procedures, as well as when to institute treatment. The ASH suggests a safe platelet count of at least 50×10^9/l for both vaginal delivery and cesarean section. Platelets less than 10×10^9/l or platelets 10-30×10^9/l in the second/third trimester or symptomatic bleeding are indications for treatment.[5] The BCSH suggests a safe platelet count of at least 50×10^9/l and 80×10^9/l for vaginal delivery and cesarean section respectively.

A minimum platelet counts of 80×10^9/l is considered safe for epidural analgesia. Platelets less than 20×10^9/l in any trimester is an indication for treatment under the BCSH guidelines.[6]

With regards to peripartum management in patients with ITP, the risk of maternal hemorrhage is minimized by ensuring minimum platelet counts required for vaginal delivery, cesarean section and epidural analgesia, as stipulated by the ASH or BCSH guidelines.[5,6]

In this case, the patient had a platelet count of $3x10^9$/l which was risky for delivery and thereforevarious treatment combinations consisting of platelet transfusion, steroid, IVIG were tried to reach the optimal platelet count in our case.

The standard treatment for ITP is corticosteroids to stop further destruction of platelets, with a starting dose of 1 mg/kg/day (weight based on pre-pregnancy weight), after which the dose should be titrated to the lowest effective dose to achieve remission.[7] This patient was given Prednisolone throughout her antenatal period and methylprednisolone 1gm preoperatively.

Alternatively, IVIG can be considered as first-line therapy for pregnancy-associated ITP, especially when rapid rise of the platelet count is necessary and therapy is needed for a shorter duration. The same was given to our patient.

CONCLUSION

Idiopathic thrombocytopenia requires careful history, examination and laboratory investigations to exclude other causes of thrombocytopenia. The aim of management is to maintain an adequate platelet count that will minimize the risk of bleeding during pregnancy, delivery and postpartum. Bleeding with ITP is unusual, even with very low counts. Prednisolone is the usual first-line choice to stop further destruction of platelets and it is often administered at lower doses than those recommended for nonpregnant women to minimize the risk of adverse effects on the mother (gestational diabetes, postpartum psychoses). If the platelet counts are very low, or the patient is experiencing haemorrhage, or there is an inadequate response to steroids, IVIG should be considered, as it acts more quickly than steroids. Monitoring platelet count periodically, proper antenatal care and institutional deliveries enable obstetricians to diagnose thrombocytopenia and its complications at an early stage, and early intervention results in better fetomaternal outcome. Platelets should be available on standby and management should be in close consultation with a physician experienced in obstetric cases. An anesthetist consultation in the latter part of pregnancy to discuss alternative analgesia for delivery is helpful. Collaboration between the obstetrician, physician and anesthetist in a patient with ITP is important to provide a smooth antenatal journey to ensure good maternal and fetal outcomes.

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