CASE REPORT

Splenectomy during pregnancy: treatment of refractory immune thrombocytopenic purpura

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simrankaur_khurana@yahoo.
co.in**SUMMARY**

Immune thrombocytopenic purpura (ITP) complicates 1–2/10 000 pregnancies and accounts for 5% of cases of pregnancy-associated thrombocytopenia. Corticosteroids and intravenous immunoglobulin remain the first-line therapy in pregnancy, and a majority of pregnant women respond to this conventional therapy. Other cytotoxic and immunosuppressive agents used for treatment in non-pregnant patients, for example, danazol, cyclophosphamide, vinca alkaloids and azathioprine, are potential teratogens and cannot be administered during pregnancy. For pregnant women with ITP who fail to respond to medical management and are at a significant risk of haemorrhage due to thrombocytopenia, splenectomy may be considered as an option. We report two cases of splenectomy during pregnancy for refractory ITP. In one patient, it was carried out at 24 weeks, and in the second patient it was carried out during the caesarean section. Splenectomy as a second-line option in cases of refractory severe ITP in pregnancy is discussed.

BACKGROUND

Immune thrombocytopenic purpura (ITP) is an autoimmune disorder in which autoantibodies are formed against platelet membranes. These IgG autoantibodies are responsible for premature destruction of platelets by macrophages in spleen and other organs of reticuloendothelial system. ITP is most commonly seen among women of reproductive age.¹ The incidence is 1–2/10 000 pregnancies and accounts for 5% of cases of pregnancy-associated thrombocytopenia. The condition should be distinguished from other causes of thrombocytopenia, especially incidental or gestational thrombocytopenia, which is found in 7% of pregnancies.¹ Diagnosis requires the exclusion of pre-eclampsia, systemic lupus erythematosus, lupus anticoagulant and anticardiolipin syndromes as these may have associated thrombocytopenia. The clinical presentation is similar to that in the non-pregnant individual. Patients may be diagnosed following the detection of asymptomatic thrombocytopenia on routine testing or less commonly with more severe thrombocytopenia accompanied by bruising, bleeding and petechiae.²

Corticosteroids and intravenous immunoglobulin (IVIg) are recommended as first-line therapy for treatment of ITP in pregnancy,^{3–4} but the high cost precludes its use in developing countries. Other agents namely cytotoxic and immunosuppressive agents, for example, danazol, cyclophosphamide, vinca alkaloids and azathioprine are potential

teratogens and are contraindicated in pregnancy.³ Splenectomy may be considered as a second-line therapy for pregnant women with refractory ITP.

We report two cases of refractory ITP during pregnancy. In one patient, splenectomy was carried out at 24 weeks, and in the second patient it was carried out during the caesarean section.

CASE PRESENTATION**Case 1**

A 23-year-old G3P0+0+2+0 woman presented to casualty at 10 weeks of gestation (POG) with bleeding per rectum and petechiae all over her body for the last 2 days. There was no history of fever, bleeding per vagina or any history of trauma antecedent to these symptoms. But the patient had a history of easy bruisability since the childhood.

Laboratory investigations showed isolated thrombocytopenia (platelet count of 3000/ μ L) with a haemoglobin content of 12 g% and total leukocyte count (TLC) of 5500/ μ L. Other routine laboratory investigations were within the normal limits. The patient was given symptomatic treatment and was transfused 18 platelet-rich plasma (PRP) over a period of 2 days. Other investigations to rule out secondary causes of thrombocytopenia, that is, lupus anticoagulant, anticardiolipin antibodies (IgM, IgG), b2-glycoprotein, antinuclear antibodies, dsDNA, HIV, HBsAg and anti-HCV were negative. Bone marrow aspirate showed giant platelets with megakaryocytosis. Hence, diagnosis of ITP with pregnancy was made. Ultrasound carried out for fetal viability showed single live intrauterine fetus of 10 weeks gestation.

TREATMENT

The patient was started on prednisolone 50 mg once daily and discharged at 12 weeks with platelet count of 30 000/ μ L. She came after 1 week (13 weeks) with platelet count of 4000/ μ L but the patient was asymptomatic this time. She was admitted and transfused four PRP. Prednisolone dose was increased to 60 mg but there was no improvement in the platelet count (<10 000/ μ L). Hence, the decision for IVIg was taken. The patient received two doses of IVIg with a dose of 1 g/kg (60 g) on alternate days at 21 weeks POG. The patient's platelet count improved transiently (upto 30 000/ μ L) but after 3 weeks there was a significant fall in the platelet count to 3000/ μ L. In view of refractory thrombocytopenia, despite corticosteroid and immunoglobulin therapy and risk of haemorrhage due to thrombocytopenia, the decision for splenectomy was taken. Preoperatively, the patient was given triple vaccination (against meningococcus,

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pneumococcus and influenza B). Intravenous methyl prednisolone was started with a dose of 100 mg thrice daily which was tapered gradually. As the patient's platelet count was 15 000/ μ L before surgery, she was transfused 2 units of single donor platelets (SDP), and 2 units of SDP and 8 units of PRP were arranged for the patient. After giving general anaesthesia, the abdomen was opened by supraumbilical midline vertical incision. Splenectomy was uneventful with a blood loss of about 100–200 mL. Postsplenectomy, the patient received 8 units of PRP. The platelet count in the second day postsplenectomy was 45 000/ μ L. Prednisolone dose was decreased to 10 mg/day postsplenectomy but had to be increased to 50 mg because of persistently low platelets between 20 000 and 30 000. The patient's platelets ranged between 30 000 and 40 000/ μ L postsplenectomy (compared with 3000–4000 presplenectomy). At 28 weeks, the patient developed gestational diabetes (probably steroid induced) which was controlled on insulin. Rest antenatal course was uneventful. An ultrasound analysis showed normal fetal growth. At 34 weeks of gestation, patient had preterm premature rupture of membranes. The platelet count at that time was 45 000/ μ L. Labour was induced with oxytocin after transfusing 6 units of PRP to the patient. The patient delivered a male baby, 2.01 kg, vaginally without any significant bleeding. The patient was given intravenous oxytocin infusion and transfused four PRP after delivery prophylactically to prevent postpartum haemorrhage. Postpartum period was uneventful and her platelet count ranged between 40 000 and 50 000/ μ L.

Neonatal outcome: The baby had severe thrombocytopenia at birth with platelet count of 18 000/ μ L but the baby was asymptomatic. The baby received 4 units of PRP and two doses of IVIg (1 g/kg) on day 2 and 3 of life. The baby was asymptomatic without any bleeding manifestations. Non-contrast CT of the head carried out to rule out any intracranial haemorrhage was normal. The baby was discharged after 5 days with platelet count of 18 lakh/ μ L.

Case 2

A 34-year-old G4P1+0+2+1 woman was referred to our antenatal clinic at 36 weeks in view of severe thrombocytopenia. The patient was diagnosed as a case of ITP during the second abortion 2 years back when she continued to have a heavy bleeding after the surgical evacuation. On investigations, she was found to have platelet count of 3000/ μ L and was diagnosed to have ITP after investigations. Patient was started on tab prednisolone 50 mg once a day which she took for 1 year and then stopped on her own. Prednisolone was restarted in the current pregnancy at 30 weeks gestation when patient's platelet count

dropped to 4000/ μ L. The patient's platelet count did not improve even at 70 mg prednisolone per day. Hence, the decision for IVIg was taken, for which the patient could not afford. So, she was referred to our institute for further management. In view of persistently low platelet count (<10 000/ μ L) refractory to steroid therapy, the decision for splenectomy was taken. At 38 weeks POG, the patient was taken up for elective lower segment caesarean section (previous caesarean with borderline pelvis) along with splenectomy. She was transfused 2 units of SDP before the surgery. The procedure was uneventful with a blood loss of around 500 mL. The postpartum period was uneventful. Her platelet count ranged between 40 000 and 50 000/ μ L in the postpartum period. Neonatal course was uneventful with platelet count of 1.6 lakh on day 3.

DISCUSSION

Pregnancy is a condition when ITP may be diagnosed for the first time. Increased levels of macrophage-colony stimulating factor, a normal feature of pregnancy, has the potential to augment thrombocyte destruction by activating macrophages. Patients with ITP who fail to respond to first-line treatment or require unacceptably high doses of steroids to maintain a safe platelet count are said to have refractory ITP.³ As cytotoxic and immunosuppressive agents used to treat ITP in non-pregnant woman are potential teratogens, splenectomy may be considered as a second-line therapy for pregnant patients. Remission of ITP is initially achieved in approximately 75% of pregnant women who undergo splenectomy.⁵

Splenectomy during pregnancy was previously regarded as a high-risk procedure for the mother and the fetus,¹ but nowadays with safe surgical techniques and improved neonatal care it is considered a second-line therapeutic option for refractory ITP during pregnancy.^{1–5}

Tables 1 and 2 show the cases of ITP where splenectomy was carried out as a second-line therapy during the antenatal period or the caesarean section, respectively.

In our second case, splenectomy was contemplated with the caesarean section as the patient presented with severe thrombocytopenia, not affording immunoglobulin therapy, late at 36 weeks of gestation.

If required, splenectomy should preferably be performed in the second trimester, as a surgery earlier in the pregnancy carries a high risk of abortion, and later in pregnancy, splenectomy may be technically difficult due to obstruction of the surgical field by the gravid uterus. Laparoscopic splenectomy can be safely performed in pregnant women.¹⁰

Table 1 Cases of splenectomy during antenatal period

Serial number	Study	Parity	POG at presentation (weeks)	First-line therapy	POG at splenectomy (weeks)	Technique	POG at delivery (weeks)	Neonatal thrombocytopenia
1	Besa <i>et al</i> ⁶	—	—	—	29	Abdominal	—	—
2	Stiemer <i>et al</i> ⁷	—	28	—	29	Abdominal	30, lscs	None
3	Gottlieb <i>et al</i> ¹	Primigravid	9	Steroid	21	Abdominal	34, vaginal	Present (22 000/ μ L)
4	Anglin <i>et al</i> ⁸	G2P1	11	Steroid	22	Laparoscopic	Term, vaginal	None
5	Griffiths <i>et al</i> ⁹	Primigravid	—	Steroid+IVIg +anti-D globulin	20	Laparoscopic	34	—
6	Felbinger <i>et al</i> ¹⁰	—	—	Steroid	20 weeks	Laparoscopic	—	—
7	Present case 1	G3+0+0+2+0	10	Steroid+IVIg	24	Abdominal	34, vaginal	Present (18 000/ μ L)

IVIg, intravenous immunoglobulin; POG, period of gestation.

Table 2 Cases of splenectomy during cesarean section

Serial number	Study	Parity	POG at presentation (weeks)	First-line therapy	POG Cesarean Section	Intrapartum/postpartum complications	Neonatal outcome
1	Heyes <i>et al</i> ¹¹	—	33	Steroid	39	None	Transient thrombocytopenia
2	Euliano <i>et al</i> ¹²	Primigravida	20	—	—	—	—
3	Sendag <i>et al</i> ¹³	—	34	Steroid+IVIg	—	—	—
4	Elezović <i>et al</i> ¹⁴	4 patients	—	—	—	—	—
5	Varghese <i>et al</i> ¹⁵	G2	8	Steroid +danazol	37	None	Thrombocytopenia on day 7 of life
6	Karne and Patil ¹⁶	G4P1A2	32	Steroid+IVIg	—	None	Thrombocytopenia on 2nd day of life
7	Present case 2	G2P1L1	36	Steroid	38	None	Transient thrombocytopenia

IVIg, intravenous immunoglobulin; POG, period of gestation.

Intrapartum splenectomy can be considered if patient presents at an advanced gestation or develop severe thrombocytopenia in late third trimester.

Learning points

- ▶ Immune thrombocytopenic purpura complicates 1–2/10 000 pregnancies and accounts for 5% of cases of pregnancy-associated thrombocytopenia.
- ▶ Corticosteroids and intravenous immunoglobulin remain the first-line therapy in pregnancy, and vast majority of pregnant women respond to this conventional therapy.
- ▶ Splenectomy can be considered as a second-line option in pregnant women with severe refractory thrombocytopenia resistant to corticosteroid and immunoglobulin therapy as other second-line agents used to treat ITP in non-pregnant patients are potentially teratogenic.
- ▶ Splenectomy should preferably be carried out during the second trimester of pregnancy, and if patient presents late, splenectomy can be considered along with the caesarean section.
- ▶ Although splenectomy during pregnancy carries a risk of abortion, preterm labour and preterm rupture of membranes (risk not quantified in the literature), it has to be weighed against risk of life-threatening haemorrhage due to severe thrombocytopenia.

Competing interests None.

Patient consent Obtained.

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