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Perioperative management of pregnancy induced aplastic anemia with intrauterine fetal demise posted for caesarean section

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ABSTRACT

Aplastic anaemia is a rare haematological disease in pregnancy, which carries a major risk of materno-fetal morbidity and mortality. Pregnancy may be one of the causes of this disease, but in some instances the severity spontaneously reduces after delivery. Death is due to haemorrhage or infection secondary to thrombocytopenia and neutropenia. Haemorrhage is the major complication in pregnant mothers after caesarean section. Aplastic anaemia is known to increase the antenatal complications such as preterm birth, intrauterine death, stillbirth, spontaneous miscarriage. Here, we report a case of successful perioperive management of a 30 year old female with pregnancy induced aplastic anaemia and intrauterine fetal demise posted for elective caesarean section.

INTRODUCTION

Aplastic anaemia is a rare disease caused by the destruction of pluripotent stem cells in the bone marrow with an annual incidence of 2 to 6 /1,000,000[1]. Pregnancy induced aplastic anaemia is a rare entity and the association is not well explained. It is life-threatening for both the mother and child. Till now, only 80 cases were reported in the literature [2]. Since this case of pregnancy induced aplastic anaemia was refractory to blood and platelet transfusion, we are presenting the perioperative management considerations that were followed in the successful outcome of general anaesthesia for lower segment caesarean section (LSCS).

Case History

A 30 years old female, with obstetric code Gravida 4, Para 1, Live 1, Abortion 1, presented at 30 weeks of gestation with complaints of bleeding gums. Her I and II trimester antenatal history was uneventful. She took iron and folic acid tablets regularly. There was no past history of medications, radiation exposure, viral infections and autoimmune diseases. Laboratory investigations revealed pancytopenia (Table -1).She was then referred for hematological consultation where the diagnosis of Pregnancy induced aplastic anemia was made (Table -2) and Tab. Cyclosporine A (CsA) 150 mg twice a day was started. On the same day, fetal movements were not felt by her. So immediate USG abdomen was done and it revealed a single intrauterine fetal demise of 30 weeks and 3 days. Patient was admitted and investigations were sent. Reports revealed pancytopenia, positive fibrin degradation products (FDPs) and a high normal coagulation tests (Table -1). Six units of platelet concentrates, six units of fresh frozen plasma (FFP) and two units of packed red blood cells were transfused in three days. Meanwhile, induction of labor was also tried but failed. Inspite of transfusion, the platelets count was low. Since maternal mortality is very high in these cases, an elective caesarean section was planned under general anesthesia with high risk consent. In the Operating room, all noninvasive monitors (Heart rate, SpO_2, NIBP and ECG) were attached and i.v. line secured with 18 gauge cannula. Before induction, patient was preloaded with 500 ml colloid of hydroxyethyl starch over 45 minutes as the preoperative blood pressure was 100/60 mm Hg. Patient was premedicated with inj. pantoprazole 40 mg, inj. Ondensetron 8 mg, inj. glycopyrrolate 0.2 mg and inj. fentanyl 2 µg/kg. Anaesthesia was induced with 250 mg of thiopentone sodium and tracheal intubation was done after achieving adequate muscle relaxation with 75 mg of succinylcholine. Thereafter, anesthesia was maintained with propofol infusion at 50 µg/kg/min, airoxygen mixture and inj.vecuronium at 0.05 mg/kg loading followed by 0.01 mg/kg every 15 minutes. Single dead born male infant was delivered by

LSCS. Inj.tranexamic acid 1 gm was given and two units of platelets were transfused during surgery. After completion of the surgical procedure, patient was reversed with inj.neostigmine and inj.glycopyrrolate. Patient was extubated & shifted to high dependency unit (HDU) with aldrete score of 10. The perioperative period went uneventful. Total duration of surgery was about 90 minutes and two units of platelets were transfused during the recovery period. The i.v maintenance fluid was given at 110ml/hr and the urine output was adequate. Tab. cyclosporine A was continued in the post-op period. Oral feeding was allowed on second postoperative day. After 2-3 days, blood report revealed dramatic improvement of all cell counts (Table 1).Regular per vaginal examination also revealed no bleeding. Since the patient recovered with no further complications, she was discharged from the hospital on 7th postoperative day.

DISCUSSION

Aplastic anemia is a serious hematological disorder characterized by pancytopenia, bone marrow hypocellularity, and absence of underlying malignant or myeloproliferative disease.[3]There are a number of reports of pregnancy-associated aplastic anaemia, but the relationship between the two conditions is not always clear.[4] Hormonal mechanism causing this disease is supported by the fact that in a few patients, the termination of pregnancy caused haematological recovery whereas subsequent pregnancies precipitated relapse. [4,5] Aplastic anemia is known to influence the maternal and fetal outcome.[6] Vaginal delivery would be safe in such patients because of less chance of bleeding and secondary postpartum haemorrhage as compared to caesarean section. In addition, as these patients are more prone to infections, the risk of sepsis would be minimal in vaginal delivery compared to caesarean section. However, a decision was taken for an elective caesarean section in our patient, as trial of medical expulsion of dead fetus was failed. As blood reports revealed pancytopenia & deranged coagulation profile so, platelet concentrates, packed red blood cells and FFP were transfused in the preoperative period. Higher antibiotic coverage was also done. Inspite of that, there is no improvement in cell count. General anesthesia was preferred over regional anesthesia, as we could not achieve a steady platelet count of >100 x109/L. Furthermore, it is easier to manage severe blood loss when a patient is anaesthetized and well oxygenated. We did not start nitrous oxide & inhalational agent because of immunosuppressive properties of these agents [7]. Also there is a risk of increased uterine bleeding with the use of inhalational agents [8]. Ultimately, patient's blood cell count was improved after termination of pregnancy. Though bone marrow transplant is widely accepted in the treatment of aplastic anemia, it is contraindicated in pregnancy as it provokes the use of high doses of immunosuppressive drugs in order to prevent graft-versus-marrow-reaction [4]. The use of anti thymocyte (ATG) or anti lymphocyte globulin was found to be safe only in a few previous reports [9]. However, there is an associated risk of thrombocytopenia with these drugs and therefore platelet transfusion should be administered. Furthermore, the use of cyclosporine was found to have results comparable to ATG in pregnant mothers [10]. A few reports also demonstrated the safe use of cyclosporine in pregnant mothers who underwent organ transplant [11]. Thus, cyclosporine was administered with platelet transfusion throughout the pregnancy and during the postpartum period. This potential life-threatening disease has a relatively good prognosis for both mother and child after optimal

Table 1. Haematological profile at presentation, preoperative period & during postoperative period

Investigations	At presentation	On Admission Day	Prior to Surgery	Day of Surgery	postoperative period (3rd postoperative day)
Hemoglobin(g/dl)	8.4	8.2	8.7	8.8	13.8
White blood cells (count/mm^3)	4,400	4,200		3400	4300
Platelets(count/mm^3)	25,000	22,000	40,000	24,000	1.24
Bleeding time (seconds)		3.15	3.25	3.25	
Clotting time (seconds)		5.40	6.40	6.30	
PT/INR (seconds) Control – 14 seconds		17/1.21	16/1.11	17/1.22	
A.P.T.T. (seconds) Control – 34 seconds		32	30		
FDP		Positive			

Table 2. Investigation suggestive of pregnancy induced aplastic anemia

Investigations	Result	Reference range
Antinuclear antibody	Negative	
HIV ELISA	Negative	
Anti – HCV antibody	Negative	
HBs Ag	Negative	
T4 (Thyroxine) (nmol/L)	229	60-160
TSH (Thyrotropin) (mIU/L)	5.60	0.3 -5
Hemoglobin(g/dl)	8.4	
White blood cells (count/mm^3)	4,000	
Platelets(count/mm^3)	20,000	
Retic count	5.8 %	
Bone marrow aspiration/ imprint	Evidence of? mild	
smear	hypoplasia	
Bone marrow biopsy	Suggestive of mild hypoplasia	

treatment [12].

CONCLUSION

This is important case, because at first there was a dilemma in diagnosis either it is disseminated intravascular coagulopathy due to intrauterine dead fetus or pregnancy induced aplastic anemia which is very rare. Secondly, the patient was refractory to platelet transfusion so, the alternative option like, either we go for GM-CSF (granulocyte monocyte colony stimulating factor) or not. Thirdly, there is improvement in all three lineages of blood count after termination of pregnancy so, terminate pregnancy as soon as possible , if fetus is viable. Fourth, such problem can recur in another pregnancy also, so this must be in mind of the patient as well as her attending doctor to take proper management in saving both mother as well as fetus.

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