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Aplastic Anemia during Pregnancy with Complete Remission: Case Report and Review of the Literature

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Authors' contributions

This work was carried out in collaboration between all authors. Author RH designed the study, wrote the protocol and wrote the first draft of the manuscript. Author AB managed the literature searches, and analyses of the study performed the spectroscopy analysis. Authors BE and AAJ managed the experimental process. Authors BSN, BBA, SB, BYY and KA identified the species of plant. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

The association of aplastic anemia (AA) and pregnancy is exceptional and there are no clear guidelines for its management, It could be life threatening for both mother and child and a challenge to the hematologist as well as the obstetrician. Sometimes it improves spontaneously after delivery. We report a case of pregnant woman in whom severe AA was diagnosed, managed during pregnancy with supportive therapy leading to normal delivery of a full term healthy foetus, with good outcome after a follow up of three years.

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1. INTRODUCTION

Aplastic anemia (AA) is a rare disorder with an estimated incidence of around 1–2 cases per million per year [1]. It's association with pregnancy is rare but life threatening condition for both mother and children [2]. Therefore, the monitor and management of pregnant women with AA poses a challenge for clinicians [3]. There are no clear guidelines for its management [4].

The only causal therapy for AA is bone marrow transplantation, which is contraindicated during pregnancy because of it's potential embryo toxicity [5]. Treatment options are erythrocytes, platelet transfusions, antibiotics and immunosuppressive therapy. Spontaneous remission can occur in 25–30% of cases [6].

2. CASE REPORT

A 25-year-old third gravida woman with an uneventful medical history presented at 26 weeks of gestation with complaints of generalized weakness, fever and cough. She did not use medications and had not been exposed to toxic materials. Pertinent physical findings included generalized pallor, there was no lymphadenopathy or organomegaly and there was no hemorrhagic syndrome. The uterus was relaxed, non-tender and of appropriate size for gestation.

Complete blood count revealed a hemoglobin level of 3.6 g/dL, white blood cell count (WBC) of 2200/mm^3 with differential 992/mm^3 neutrophils, platelet count of 11000/mm^3 and reticulocytes 13000/mm^3. The coagulation screen, electrolytes, renal and liver function tests were normal. No iron, folic acid and Vitamin B_{12} depletion were encountered. Serology for hepatitis, human immunodeficiency virus and other viral entities were negative.

Bone marrow biopsy showed hypocellular marrow with decrease in all 3 hematopoietic cell lines without signs of malignancy, confirming the diagnosis (Fig. 1).

Medullary karyotype was normal; phenotyping by flow cytometry to looking for a clone paroxysmal nocturnal haemoglobinuria (PNH) was negative.

Clinical and laboratory findings supported the diagnosis of severe aplastic anemia.

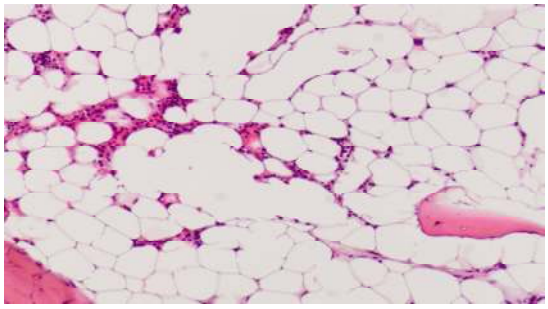

Fig. 1. Hypocellular bone marrow with little hematopoesis and many fat cells

Regular antenatal monitoring from the hematologist as well as the obstetrician were organised.

The patient underwent transfusion program phenotyped red blood cell and platelet units compatible in order to maintain haemoglobin level above 10 g/dL and platelet count above 20000/mm^3 and antibiotics for fever, in order to prevent serious consequences of anemia, thrombocytopenia, and infection for both the mother and fetus.

Fetal monitoring was armed, based on obstetric ultrasound and fetal doppler, a prevention of fetal immaturity by betamethasone was instituted. At the 38th week of gestation, the patient was hospitalized for childbirth. She was transfused into platelet units. The concentration of hemoglobin was maintained higher than 10 g/dL and platelet concentration was greater than 50000/mm^3. She delivered vaginally and she had a boy baby with a normal weight and Apgar 10/10. During the postpartum period, no bleeding or infectious complications were observed. The patient was discharged after five days of motherhood hospitalization.

After regular monitoring by monthly blood counts, hemoglobin and platelet counts were normalized spontaneously after two months of follow up. The patient is still in remission with a decline of three years.

3. DISCUSSION

Aplastic anemia (AA) is a serious hematological disorder, characterized by pancytopenia, decreased bone marrow cellularity and absence of underlying malignant or myeloproliferative disease. Aplastic anemia associated with

pregnancy is rare [7]. The relationship between aplastic anemia and pregnancy remains controversial. It has been suggested that pregnancy causes increase in production of placental lactogen, erythropoietin and oestrogen. Placental lactogen and erythropoietin causes increase in haematopoiesis but high doses of oestrogen inhibit marrow production [2]. The hypothesis that imbalance of hormones during pregnancy may cause aplastic anemia is further supported by descriptions of spontaneous haematological improvements following termination of pregnancy, and relapses during subsequent pregnancies. Anemia complicating pregnancy is serious condition with potential risks for both mother and the fetus. Aplastic anaemia is known to cause an increase of hemorrhage and sepsis to the mother, while the fetus may suffer from growth retardation and even intrauterine death owing to the impaired fetal oxygenation [7].

In young non-pregnant patients with severe aplastic anemia, a matched sibling donor haematopoietic stem cell transplant has been reported to be the most effective treatment, with a 5-year survival of l of 70 to 80% [8]. However, bone marrow transplantation is contraindicated during pregnancy because of the teratogenic effects of the immunotherapy and radiotherapy for the unborn child [5]. There are only few reports of antithymocyte immunoglobulin or cyclosporine administration during pregnancy where it was found to be both safe and effective but there is currently little agreement on the universal use of these therapies. Androgens are relatively contraindicated during pregnancy, as there may be virilization of a female fetus. The efficacy of corticosteroids or granulocyte colony-stimulating factor is also equivocal. Overall, current evidence does not favor the routine use of any drug therapy in the treatment of pregnancy- associated aplastic anemia. Cyclosporine and granulocyte colony-stimulating factor have been used in aplastic anemia associated with pregnancy. However, till more reports on their use, effectiveness and adverse effects are available, they cannot be recommended [9]. During pregnancy the most important part of treatment of aplastic anemia is supportive therapy as described in this case. With frequent transfusions, there exists a risk of alloimmunisation; hence leucoreduction of blood products is needed to delay the onset of refractoriness to random donor platelet [7].

Infections can be rapidly fatal in patients with aplastic anaemia. Broad-spectrum antibiotics are useful for control of infection [9-12]. In the present case, the woman was diagnosed as having aplastic anemia in the second half of the pregnancy. Patient received supportive care and the pregnancy was uneventful until delivery.

In aplastic anemia, vaginal birth is preferred, and cesarean section (CS) is performed only for obstetric indications [9]. In our case there was no obstetric indication for CS and successful induction of labour was done at term. The postpartum period was also uneventful. Three months after delivery the blood count of the patient did recover spontaneously. Spontaneous remissions have been reported in the literature after abortion or termination of pregnancy. As in this patient, good maternal and fetal outcome can be achieved if proper diagnosis and appropriate treatment modalities are employed.

4. CONCLUSION

Aplastic anaemia during pregnancy is rare and life threatening disease. The risk of bleeding and infections are high for the mother, while the fetus may suffer from intrauterine growth retardation. Combined effort of obstetricians, haematologists, paediatricians and adequate supportive therapy may help to achieve the improvement in the maternal and neonatal outcome. Hematological recovery after delivery may occur spontaneously as in our case.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this paper and accompanying images.

ETHICAL APPROVAL

Ethical approval was taken from the patient.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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