

Severe Anemia Complicating Pregnancy with Rare Bombay Blood Group: An Obstetric Challenge

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Abstract: *Bombay blood group is very rare, the prevalence being 4 per million. The clinical significance lies in the fact that these individuals can only be transfused blood of the same rare group. Here we report a case of severe anemia in pregnancy with Bombay blood group and the challenge we faced in its management.*

Keywords: Bombay blood group, severe anemia, pregnancy, hemolytic disease of newborn

1. Introduction

Bombay blood group is very rare, the prevalence being 4 per million¹. In some population like Mumbai the prevalence may rise to 1 in 100001 and the prevalence in Karnataka being 0.005%. Dr. Y.M. Bhende first discovered Bombay blood group in 1952 at Bombay². The clinical significance lies in the fact that these individuals can only be transfused blood of the same rare group.

2. Case Report

A 34 year old G2P1L1 at 34 weeks 5 days period of gestation with previous LSCS was referred to our hospital with severe anemia with Bombay blood group, which was detected during cross matching for blood transfusion. On admission her hemoglobin was found to be 6.8g/dl and blood group was Oh Positive (Bombay blood group). The diagnosis of iron deficiency anemia was established by measurement of the hematological inherited blood type that lack the H antigen on red blood cells. The H antigen is the precursor to both the A and B glycoproteins that constitute group A and B blood types, respectively. Those with group O blood type have an absence of A or B glycoprotein but still have the H antigen. People with Bombay blood type have naturally occurring anti A, anti B and anti-H antibodies. Red blood cell transfusions for persons with Bombay phenotype must be either autologous or from another Bombay phenotype donor. Bombay phenotype can receive fresh frozen plasma and cryoprecipitate from any group for the treatment of coagulopathies. However, platelet transfusion should be limited because ABH antigens are also expressed on platelets.

Due to lack of correct blood grouping practices, the rare Bombay Oh phenotype may be missed. In the absence of blood donor registry, management of patients with antepartum and postpartum hemorrhage would be an obstetric nightmare. Reverse grouping or serum grouping has to be done routinely to detect this group earlier¹. The

safety of autologous blood donation during pregnancy has been addressed in numerous articles. Nicole et al used an erythropoietin regimen where Erythropoietin at a dose of 200IU/kg was given three times a week during the week before and the week after autologous blood donation and red cell apheresis technique was used to retrieve red cells. By this method 3 units of packed red blood cells were retrieved during pregnancy without causing post donation anemia².

Erythropoietin and parenteral iron combination is effective in the management of iron deficiency anemia in pregnancy, especially when iron supplementation alone fails, or in severe cases as an alternative to blood transfusion. This combination leads to rapid restoration of normal hemoglobin levels (3.0 g/dl increase within the first 2 weeks) ³

There are limited reports of HDN in Bombay phenotype in literature. The relative mildness of the disease could be due to the weak expression of these carbohydrate antigens on fetal RBCs and the predominant immunoglobulin class which is IgM does not cross the placenta. ABO and H parameters like serum ferritin, TIBC, RBC indices (MCV, MCH, MCHC, RDW) and peripheral smear. Due to the non availability of blood, she was treated with injectable iron ferrous carboxy maltose 750mg followed a week later by Inj. Erythropoietin 10000IU per week along with iron sucrose injection 200mg 3 doses on consecutive days and Vitamin B12 injections. This protocol raised her hemoglobin to 9.5g/dl in 3 weeks. Meanwhile donors were searched throughout Dakshina Kannada and 2 units of blood were reserved to deal obstetrical hemorrhage at the time of delivery. Patient underwent Elective LSCS with tubal sterilization at 38 weeks period of gestation with no intraoperative or postoperative complications. Baby and mother were fine and discharged on 5th postoperative day. Patient was later counseled for autologous blood donation.

3. Discussion

Bombay blood type, also known as Oh, is a recessively expressed blood group antigen. Antigens are expressed on virtually all cells in the body thus the anti H antibodies can be absorbed by tissues or neutralized by the soluble substances in plasma. Since these antibodies are preformed even the first baby is at risk for significant hemolysis. Oh blood resuspended in AB plasma is recommended for exchange transfusion in neonates^{2,4}.

4. Conclusion

Early detection of Bombay blood group by routine reverse grouping, autologous donation and cryopreservation to deal obstetrical hemorrhage, maintenance of blood donor registry for rare blood groups, routine antenatal care, prevention and correction of anemia at an earlier stage could be life saving for both the mother and fetus.

References

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