

HAEMOLYTIC DISEASE OF THE NEWBORN DUE TO ANTI K ANTIBODIES IN A KELL NEGATIVE MOTHER

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A very rare case of haemolytic disease of the newborn due to anti k antibodies is reported. The mother of this newborn belonged to an extremely rare phenotype where all Kell locus gene products were absent thus making her capable of producing antibodies against all Kell blood group antigens. This extremely rare situation makes it impossible to get compatible blood of the same blood group. Bahrain Med Bull 1996;18(1):

Alloimmune haemolytic anaemia of the newborn (erythroblastosis foetalis) is a disease of the foetus and newborn caused mostly by the D antigen of the Rh blood group system¹. Very rarely erythroblastosis is due to anti k which is part of the Kell blood group system²⁻⁴. We report a case of erythroblastosis foetalis due to anti k antibodies produced in a mother who is negative for almost all Kell blood group antigens.

THE CASE

A 28 years old Bahraini woman admitted at 29 weeks gestation with vaginal bleeding and lower abdominal pain. This was her second pregnancy. Her first pregnancy had resulted in full term normal delivery. She was on regular checkup at the antenatal clinic. Her blood group was O,Rh positive and she was negative for VDRL, sickling and G6PD deficiency. No screening for antibodies was done during her antenatal checkups. After admission her bleeding continued and her haemoglobin dropped from 10.5 g/dl to 8.3g/dl. Screening for antibodies was done and indirect Coombs results showed 4+ positivity with antibody titre of 1:2056. The patient was found to be negative for K,k,Kpa,Kpb antigens and her husband of consanguineous marriage was blood group A,Rh positive, k and Kpb positive and negative for K and Kpa. The antibodies in the mother were thus of anti k and Kpb in nature.

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She delivered a live male infant weighing 1.6 Kg. His apgar score was 8 and 9 at one and five minutes respectively. His direct antiglobulin test was positive. His haemoglobin was 4.6 g/dl and bilirubin 38 Um/L. The baby expired after 14 hours due to extreme prematurity and severe anaemia. No transfusion could be made available due to non availability of suitable blood.

DISCUSSION

The Kell blood group system consists of 4 major sets of antithetical antigens K and k, Kpa and Kpb, Jsa and Jsb, Wka and Wkb⁵. One member of each pair is inherited from each parent. When red cells fail to react with any of the Kell system antibodies, it is known as K0. This is due to absence of Kell locus gene product. This phenotype is extremely rare. These people are capable of producing antibodies against all Kell group antigens. The mother in our case was negative for the major Kell group antigens K and k and Kpa and Kpb. Hence most likely she is K0. The father was positive for k and Kpb, which must have resulted in a foetus positive for k and Kpb, thus inducing anti k and anti Kpb

antibodies in the mother who was negative for these antigens and bringing about an infant with haemolytic disease of the newborn.

Around 99.8% of the Western Europeans are k positive leaving only 0.2% to be k negative⁶. Negativity for k is also extremely rare among the Black people. To date there are only 7 cases of anti k reported in literature^{2-4,7}. In a study at Manitoba where 350000 pregnancies were screened for antibodies 3426 instances of alloimmunisation were detected out of which only one case was due to anti k⁴.

Our case is an extremely rare instance of haemolytic disease of the newborn due to anti k antibodies in the mother who is negative for most Kell group antigens. This extremely rare situation makes it impossible to get compatible blood of the same phenotype. Anti Kell erythroblastosis does not differ in their clinical expression from anti D erythroblastosis and management is similar to that for Rh immunisation. However transfusion of patients with K0 phenotype poses serious problems as they are liable to form antibodies with such wide specialties that further transfusion becomes virtually impossible.

CONCLUSION

We report this case to highlight the extremely serious condition of the newborn due to a rare blood group in the mother. With recent computerisation of our Blood Bank it is now easy to maintain a donor registry for rare blood groups which will be of immense help in such patients.

REFERENCES

1. Levin P, Katzin EM, Burnham L. Isoimmunization in pregnancy. Its possible bearing on the etiology of erythroblastosis fetalis. *J Am Med Ass* 1941;116:825-7.
2. Kulich V. Hemolytic disease of a newborn caused by anti k antibody. *Cesk Pediatr* 1967;22:823-6.
3. Lee RS. Hemolytic disease of the newborn infant due to anti k (Cellano) antibody. Report of a case and review of literature. *J Am Osteopath Assoc* 1975;75:313-8.
4. Dugrid JKM, Bromilow IM. Hemolytic disease of the newborn due to anti k. *Vox Sang* 1990;58:69.
5. Bryant LB. A case of anti Cellano (k) with review of the present status of the K blood group system. *Bull South Central Assoc Blood Banks* 1965;8:4-13.
6. American Association of Blood Banks. Technical Manual. 10th ed. 1990:233-5.
7. Bowman JM, Harman FA, Manning CR, et al. Erythroblastosis fetalis produced by anti k. *Vox Sang* 1989;56:187-9.