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June 2012

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Recommended Citation

Malik, S., Moiz, B. (2012). Clinical significance of maternal anti-Cw antibodies: a review of three cases and literature. *Journal of the Pakistan Medical Association*, 62(6), 620-1.

Available at: http://ecommons.aku.edu/pakistan_fhs_mc_pathol_microbiol/19

Clinical significance of maternal Anti-Cw Antibodies: a review of three cases and literature

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Abstract

Anti Cw antibody is a low frequency immunoglobulin (IgG) against red cell antigen- Cw. It is clinically significant and may cause haemolytic disease of the newborn. Due to its low frequency, it is not included in routine antenatal antibody screening panel. The incidence of Anti Cw antibodies has not been reported in our population. Here, we describe the clinical and laboratory spectra of three pregnant women having low titres anti Cw antibodies. Fortunately, haemolytic disease of the newborn was not encountered in any case.

Keywords: Anti Cw antibody, Immunoglobulin, Haemolytic disease.

Introduction

Haemolytic disease of the newborn (HDN) is the destruction of red blood cells of the foetus and newborn by the antibodies produced by the mother. These antibodies may form as a result of previous pregnancy or transfusion.

Previously, anti D was known to be the major cause of haemolytic disease of the newborn but its incidence has declined since the introduction of Rh immune globulin. As a result other antibodies have now become clinically significant that includes major and minor blood group antibodies.

In Pakistan, the incidence of haemolytic disease of the newborn due to various antibodies is not known. However, in a local study,¹ ABO incompatibility was known to be the major cause of HDN (71%) while Rh and suspected minor blood group antigens accounted for 23% and 6% cases of HDN respectively.

Anti Cw is low frequency antigen which has been known to cause haemolytic disease of the newborn. Here we describe the laboratory and clinical spectra of three pregnant women having anti-Cw antibodies.

Case Presentation

Case-1:

A 24 year old primigravida, presented with threatened abortion at 13 weeks of gestation. She had not received any blood transfusion in the past and her blood group was AB

positive. Her husband's blood group could not be determined. Antibody screening performed as a part of the routine workup was positive and anti Cw was identified. Serial monitoring of antibody titre was done during gestation and titres were 1, 1, 2, 20 and 4 at 16, 22, 28, 32, 35 and 37 weeks respectively.

At 40 weeks of gestation, she gave birth to a live baby boy with APGAR's score of 8 and 9 at 1 and 5 minutes respectively. The baby's haemoglobin and the reticulocyte count were 16.1 gm/dl and 6.3% respectively. The blood group was B positive and direct antiglobin test was negative. Post partum antibody titre of the mother remained at 4 after a few days.

Case-2:

A 34-year-old fourth gravida, , showed a positive red cell antibody screen at 11 weeks of gestation subsequently identified as anti Cw. Her comorbids included essential hypertension and she had been treated for secondary infertility. There was no history of blood transfusion. She and her husband were typed as A positive. Anti-Cw antibody titre remained very low at 1 through out her pregnancy (tested at 11, 12 and 26 weeks).

The subject had caesarean section at 37 weeks resulting in a live birth. The baby had a low birth weight. The APGAR's score at 1 and 5 minute were 8 and 9 respectively. The blood group, haemoglobin, reticulocyte count and direct antiglobin test of the baby were not known.

Case-3:

A 23 year primigravida with no known comorbids showed a positive red cell antibody screen at 9 weeks of gestation. She had no previous history of blood transfusion. Her blood group was A positive while that of husband could not be determined. Subsequently anti Cw antibodies were identified but patient could not be followed up.

Discussion

Cw is a low frequency red cell antigen. It is inherited along with CDe and results from substitution of arginine by glutamine in the codon encoding the rhesus antigens at the molecular level (Rh8).

Anti Cw antibodies are naturally occurring but can be

stimulated by blood transfusion or pregnancy. It was initially described in 1946 by Callender and Race in a multi-transfused patient with systemic lupus erythematosus. However, its clinical significance became evident later when Lawler and van Loghem² reported anti -C w associated HDN. Besides these cases, occurrence of naturally occurring anti Cw has also been described.^{3,4}

Its reported incidence is low at 2% for the white population which is higher (5-7%) than Latvians and Finns.⁵ The antibody is clinically significant and has a potential in causing mild to moderate transfusion reactions as well as HDN.⁶⁻⁹

Pregnant women may exhibit this rare antibody in the frequency of 0.1%.¹⁰ In women who have been alloimmunized with anti Cw, about 2% of the babies develop HDN.¹⁰ Various red cell antibodies have been described in this group but there are no reports regarding anti Cw in our population. It is important that our haematologists and obstetricians should be aware of this rare red cell antibody so that the clinical course of the mother and her baby can be monitored.

Conclusion

Anti Cw antibodies are clinically significant in causing haemolytic transfusion reaction and HDN. We described three cases and the outcome was known in two only. None of them was implicated in HDN. Based on this

data and the risk of HDN, the red cell antibodies identification panel should include anti Cw. If this antibody is identified, then the titres should be monitored throughout the pregnancy in order to avoid HDN.

Acknowledgements

Fatima Azra Ausat did bench work.

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