CORRESPONDENCE

Clinically Significant IgM Anti-C^w: A Rare Report

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A 23-year-old primigravida Rh 'D' negative female visited the Rh clinic for indirect antiglobulin test (IAT). Her blood group was B Rh D negative and her husband's blood group was B Rh D positive. IAT was positive (strength +3) by gel technique (ID-Micro Typing System, DiaMed AG 1785 Cressier, Switzerland) on LISS/Coombs cards (DiaMed GmbH 1785 Cressier, Switzerland) using commercial pooled cells (ID-DiaCell pool DiaMed GmbH 1785 Cressier, Switzerland). Further, anti-C^w antibody was identified on antibody screen (ID-DiaCell I–II–III, DiaMed GmbH 1785 Cressier, Switzerland) and identification (ID-DiaCell Panel, DiaMed GmbH 1785 Cressier, Switzerland). Anti-C^w showed wide thermal amplitude by tube technique (room temperature +1, 4 °C +2 and 37 °C +1). Antibody was IgM type as antibody screen after dithiothreitol (DTT) treatment using proper controls was negative. Both wife and husband were negative for C^w antigen. There was no history of blood transfusion in the patient. For other Rh antigens, the patient's red cells typed as C+ c– E+ e– and

her husband's as C+ c+ E+ e+. Antibody titres by tube technique were negative in 1:2, however by gel technique they were 1:8. The patient delivered at 37 weeks and the baby's haemoglobin was 19.2 gm/dl and serum bilirubin of cord sample was 5.6 mg/dl. Baby's blood group was B Rh D positive and direct antiglobulin test (DAT) was negative using polyspecific antihuman globulin (Biorad Diaclon Coombs sera, polyvalent rabbit anti-IgG and monoclonal anti-C3d). Newborn's red cells were negative for C^w antigen.

C Willis (C^w) is a low frequency Rh red cell antigen with an incidence of 2 % in the Caucasian population and 5–7 % in Finns, Latvians and Lapps [1]. Anti-C^w antibody was first described in 1946 by Callender and Race in a multitransfused patient with systemic lupus erythematosus [2]. Anti-C^w can be clinically significant and can lead to mild to moderate HDFN and mild to severe immediate or delayed haemolytic transfusion reactions [3]. Anti-C^w can be naturally occurring but can be stimulated by blood transfusion or pregnancy [4]. There are case reports in the literature which describe anti-C^w of IgG type [3, 5]. But in our case report it is of IgM type which was confirmed by DDT treatment of patient's serum. We believe that this is the first case report of IgM type anti-C^w in a patient. On thorough search on PubMed, Wiley Online Library and ScienceDirect we could not find any case report of IgM type anti-C^w. It had a broad thermal amplitude hence clinically significant and could lead to haemolytic transfusion reaction. C^w antigen has a low incidence in the population, so finding C^w antigen negative blood is not a problem. The patient was issued a special immunohaematological card with details to serve as alert if the patient required blood in future.

Maternal C^w alloimmunization is not uncommon with reported frequency of 0.1 %. However, out of these

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alloimmunized women, only 2 % of the neonates may develop HDFN. The majority of anti-C^w antibodies cases appear to be clinically insignificant causing only mild to moderate HDFN [4]. Bowman and Pollock reviewed maternal C^w alloimmunization cases over 36 years and concluded that most cases were due to naturally occurring anti-C^w antibodies and although common, rarely produces severe HDFN [4]. In our case also, anti-C^w was naturally occurring. It was of IgM type and the father was negative for C^w antigen, therefore the foetus was unaffected. DCT of the newborn was negative.

In our case, the anti-C^w antibody was of IgM type with broad thermal amplitude which could lead to haemolytic transfusion reaction upon transfusion with C^w positive blood to the patient. Due to the low frequency of C^w positive individuals in the populations, some set of screening cells may not include C^w positive cells and cases with anti-C^w may be missed. This case highlights the importance of creating awareness amongst the physicians regarding the occurrence of this antibody. Such patients

should be issued an alert card for future transfusions. Moreover, screening cells should incorporate C^w positive cells for this antibody identification.

References

1. Reid ME (2012) Section II: the blood group systems and antigens—Rh Blood Group System. In: Reid ME, Lomas-Francis C, Olsson ML (eds) *The blood group antigen factsbook*, 3rd edn. Elsevier, Philadelphia, pp 147–262
2. Callender ST, Race RR (1946) A serological and genetical study of multiple antibodies formed in response to blood transfusion by a patient with lupus erythematosus diffuses. *Ann Eugen* 13:102–117
3. Klein HG, Anstee DJ (eds) (2014) *The Rh blood group system (including LW and RHAG)*. In: *Mollison's blood transfusion in clinical medicine*, 12th edn. Wiley, Oxford, pp 167–213
4. Bowman JM, Pollock J (1993) Maternal C^w alloimmunization. *Vox Sang* 64:226–230
5. Malik S, Moiz B (2012) Clinical significance of maternal anti-C^w antibodies: a review of three cases and literature. *J Pak Med Assoc* 62(6):620–621