International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Tullah FA et al. Int J Reprod Contracept Obstet Gynecol. 2026 Dec;15(12):5051-5053
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20264429

Case Report

Anti-S alloimmunization during pregnancy in a Saudi woman: a case report

Faiqa A. Tullah[1], Khawar Shafiq[2], Ghazala S. Tariq[3], Sofia Faisal Malik[4], Muna Bhutta[5], Seemin Kashif[6]*

[1]Department of Obstetrics & Gynaecology, Dallah Namar Hospital, Riyadh, Saudi Arabia
[2]Obstetrics & Gynaecology, Dr. Sulaiman Al Habib Medical Group, Ar-Rayan, Riyadh, Saudi Arabia
[3]Department of Obstetrics & Gynaecology, Al Aziziya Polyclinic, Riyadh, Saudi Arabia.
[4]Akhtar Saeed Medical and Dental College, Lahore, Pakistan
[5]Obstetrics and Gynaecology, South West Acute Hospital, Co Fermanagh, UK
[6]Environmental Sciences, Allama Iqbal Open University, Islamabad, Pakistan

Received: 23 September 2026
Revised: 16 October 2026
Accepted: 17 October 2026

***Correspondence:**
Dr. Seemin Kashif,
E-mail: seeminkashif@hotmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Alloimmunization by anti-S antibodies is reported in this case report from Saudi Arabia, where a pregnant woman delivered a healthy baby. A 36-year-old Saudi lady, G4P2A1, with previous two cesarean sections, presented at 6 weeks 2 days of pregnancy. Her antibody screen was positive, so antibody identification and titer were requested. She did not get antibody identification and titer done until the 37th week of pregnancy. Her antibody identification was anti-S antibodies, and the titer was 1:2. Her delivery was planned earlier due to the risk of hemolytic disease of the fetus. She delivered alive, healthy, term baby girl with an Apgar score of 9 at one minute and 10 at five minutes. Post-delivery antibody titer was again 1:2. The baby girl's direct Coombs test was negative. She did not have any signs of hydrops fetalis or neonatal jaundice. The patient had a history of positive anti-S antibody since 2017. She has no history of blood transfusion. In conclusion, vigorous prenatal screening for non-Rh blood groups, especially the MNS system, is essential as it has significant regional relevance in Saudi Arabia.

Keywords: Alloimmunization, Anti-S antibodies, Hydrops fetalis, Saudi Arabia, Pregnant woman, MNS system

INTRODUCTION

Alloimmunization during pregnancy is still a major problem in the current century. The fetal blood group antigen, inherited from the father, is a foreign antigen, or alloantigen, for the mother. The incompatibility of blood groups can lead to hemolytic disease of the fetus and newborn (HDFN), which causes hemolysis of RBCs of the fetus or newborn.[1] The MNS blood group is the second blood system discovered by Landsteiner and Levine in 1927. The most important antigens of this system are M, N, S, s, and U antigens.[2] The MNS blood group system antigens are clearly identified in the second half of pregnancy. The anti-S antibodies are implicated in severe hemolytic disease of the fetus and newborn (HDFN).[3]

The present study demonstrates a case report from Saudi Arabia, where a pregnant woman with positive anti-S antibodies had an uneventful delivery of the baby.

CASE REPORT

A 36-years-old Saudi lady, G4P2A1, with previous two cesarean sections, presented in the outdoor, when her pregnancy started after stopping the oral contraceptive pills on 08-08-2025. Her quantitative beta-HCG done on 21-08-2025 was 15778.3 mIU/ml. Pregnancy ultrasound

done on 21-08-2025 showed an intrauterine gestational sac corresponding to 6 weeks 2 days, located on the previous uterine scar. The fetal pole was detected, but the fetal heart was not detected. She was given 1 mg folic acid tablet. She had another obstetrical ultrasound done on 01-09-2025, and it showed a single intrauterine viable pregnancy of 7 weeks 2 days with heart sounds of 169 beats per minute. Her blood group was A positive. Hb was 12.1 G/dl, platelets, white blood cells, and RBCs were within normal limits, and hematocrit was 37.4. Viral serology for hepatitis B and C, syphilis, and HIV was negative. She was immune to Rubella. Random blood sugar and urine for culture were normal. There was no proteinuria. Her antibody screen was positive, so antibody identification and titer were requested. She did not utilize antibody identification and titer during all her follow-ups, though she was repeatedly reminded and requested until 37 weeks. She did not avail glucose tolerance test till 28 weeks of pregnancy. All her obstetric ultrasounds were normal. She had regular antenatal check-ups and was planned for repeat elective lower segment cesarean section at 38 weeks, on 8th April 2026. On 24 March 2026, her antibody identification and titer were requested again, and this time she accepted and went to the laboratory to get the tests done. Her antibody identification was anti-S antibodies, and the titer was 1:2. On follow-up on 31 March 2026, the results were explained to her, and the significance of this antibody and its titer were explained to her. Her delivery was planned earlier on 1st April 2026, due to the risk of hemolytic disease of the fetus. Husband was also suggested to get antibody identification done. Her cesarean was done on 1st April, and she delivered an alive, healthy, term baby girl with an Apgar score of 9 at one minute and 10 at five minutes. Birth weight was 3.500 kg. The amount of liquor was above average, but clear. The cesarean section was uneventful. The baby was received by the neonatologist and shifted to the nursery for routine workup. Patient was discharged on 5th of April 2026 in good condition. Post-operative hemoglobin was 12.2 g/dl, while the pre-operative hemoglobin was 11.6 g/dl. Post-delivery antibody titer was also done, which was again 1:2. The baby girl was also discharged with the mother by the pediatric department. Direct Coombs test was negative, and all routine workup for the baby, including the neonatal screening, was normal. She did not have any signs of hydrops fetalis or neonatal jaundice. Follow-up visits for both mother and baby were normal and unremarkable. From the review of her antenatal records, it was found that she was anti-S antibody positive since 2017. She has no history of blood transfusion.

DISCUSSION

In this patient, the antibody screen was positive, and antibody identification and titer were requested. But the patient did not utilize antibody identification and titer until 37 weeks of pregnancy, despite repeated requests. If any antibody is detected in maternal blood, the risk of alloimmunization should be considered, and the type of antibody should be investigated.[4] The titration of the antibody in maternal blood should also be done. If titers are higher than 1:8, the risk of fetal anemia should be monitored.[4] In our patient, an anti-S antibody titer of 1:2 was detected. Although higher titers do not necessarily indicate a more severe disease, the risk of alloimmunization is related to reaching the critical titer values. Our patient's delivery was planned earlier to avoid the risk of hemolytic disease of the fetus, because in case of rare antigens, any level of antigen should be considered dangerous. Anti-S antibodies have been documented in the literature as the cause of severe HDFN.[3-6] However, the baby girl in this case report had a negative direct Coombs test, and all her screening tests were normal. Hence, the baby was not affected by these antibodies in our case.

The patient had a history of having anti-S antibodies for at least seven years. Persistence of alloantibodies in female individuals could be attributed to prolonged exposure to pregnancy-induced microchimerism, or after pregnancies complicated by HDFN that were treated with intrauterine transfusions.[7] However, our patient did not give any history of a blood transfusion or previous HDFN. Additionally, her husband's antigen profile was not done.

The MNS blood group is the second blood system discovered by Landsteiner and Levine in 1927. The most important antigens of this system are M, N, S, s, and U antigens.[2] S antigen was named after Sydney, the capital city of Australia. The MNS blood group system antigens are clearly identified in the second half of pregnancy. The mechanisms by which these maternal alloantibodies can be acquired are a history of previous blood transfusions and pregnancy with fetomaternal hemorrhage.[8]

The prevalence of S antigen is high in many populations. When compared to the West, Eastern populations have a lower prevalence of anti-Rhesus D alloantibodies.[4] Although antibodies against the Rh group are also present, the MNS group is of special importance in Eastern populations. In one study in Nigeria, 1.4% pregnant women had alloantibodies to S antigen.[9] In another study in India, out of 1435 pregnant females, 0.27% patients had anti-S alloantibodies.[10] Various other studies in India reported similar results. However, in a US study, no neonates born to mothers with anti-S required blood transfusion.[11] The incidence of the S antigen has also been reported in both Saudi and non-Saudi populations in a Saudi study, which recommended including anti-S antigen in the screening panel of blood transfusions.[12]

The patient's anti-S titer remained 1:2 after at least four days after delivery. Her follow-up visits also remained unremarkable, reflecting no delayed hemolytic reaction in the baby. A hemolytic transfusion reaction has been reported by S antigen, even in the absence of the genetic presence of S antigen, in a patient with autoimmune hemolytic anemia (AIHA). A weakly positive S antigen was present in the serological results that could have occurred due to the transfusion of red blood cells that carry the S antigen.[5] A complete transitoriness of an antibody

occurs when it is no longer traceable by standard laboratory methods. If there is no history of the antibody, and it goes undetected in testing due to very low levels, it can still cause a delayed hemolytic reaction if the patient is exposed to the corresponding antigen.[7] However, no immediate or delayed hemolytic reaction was observed in the baby of our patient despite the presence of anti-S antibodies.

CONCLUSION

Although a low anti-S titer is a reassuring indicator of low fetal risk, vigilant surveillance should be maintained because these titers can fluctuate significantly. A vigorous prenatal screening for non-Rh blood groups, especially the MNS system, is essential as it has significant regional relevance in Saudi Arabia.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Nahendran P, Budin SB, Saat NZ, Yusop MF, Yazid TN, Anuar NN. Haemolytic of newborn disease-related red blood cell alloantibodies. J Teknol (Sci Eng). 2023;85(1):1-9.
2. Liang YL, Shi Y, Su YQ, Wu F, Liang Y, Fan X, et al. Maternal cold-reacting immunoglobulin G anti-M of MNS blood group system causing hemolytic disease of the fetus. Iran J Immunol. 2023;20(1):129-34.
3. Bakht A, Turner B, Warren CS, Simmons JH, Fadeyi EA. Anti-S antibody: a rare cause of fetal hydrops in a previously sensitized mother. Lab Med. 2021;52(6):609-13.
4. Ares SM, Nardozza LM, Araujo E, Santana EF. Non-RhD alloimmunization in pregnancy: an updated review. Rev Bras Ginecol Obstet. 2024;46:e-rbgo22.
5. Ge H, Ying Q, Dong K, Song D, Hu S, Lv D. Immunohematological investigation of fatal hemolysis in long-duration autoimmune hemolytic anemia with anti-S and anti-Wr(a) alloantibodies: a case report. Blood Genomics. 2024;8(1):10007.
6. Halawani AJ, Habibullah MM, Dobie G, Alhazmi A, Bantun F, Nahari MH, et al. Frequencies of MNS blood group antigens and phenotypes in southwestern Saudi Arabia. Int J Gen Med. 2021;14:9315-9.
7. Bogdanic D, Raos M, Lukic M, Cepulic BG. Evanescence and persistence of red blood cell antibodies over time: a single-center experience. Immunohematology. 2025;41(4):124-31.
8. Hussain ZM, Yousuf R, Suhemi NA, Aziz SA. Prevalence of clinically significant red cell alloantibodies in pregnant women. Bangladesh J Med Sci. 2025;24(4):1138-45.
9. Buhari HA, Sagir A, Akuyam SA, Erhabor O, Panti AA. Distribution of maternal red cell antibodies and the risk of haemolytic disease of the foetus and newborn in Sokoto, Nigeria. J Complement Altern Med Res. 2022;20(2):22-9.
10. Sriraman P, Sahoo D, Basavarajegowda A, Toora E. Higher prevalence of anti-S and anti-M in South India: a single-center cross-sectional analytical study. Asian J Transfus Sci. 2026;20(1):87-91.
11. Bahr TM, Tweddell SM, Zalla JM, Dizon-Townson D, Ohls RK, Henry E, et al. Neonatal and obstetrical outcomes of pregnancies complicated by alloimmunization. Pediatrics. 2024;153(6):e2023064604.
12. Halawani AJ, Jamalallai SA. The incidences of S and s antigens of the MNS blood group system in the Western region of Saudi Arabia. Clin Lab. 2026;72(2).

Cite this article as: Tullah FA, Shafiq K, Tariq GS, Malik SF, Bhutta M, Kashif S. Anti-S alloimmunization during pregnancy in a Saudi woman: a case report. Int J Reprod Contracept Obstet Gynecol 2026;15:5051-3.