Original Article

The Prevalence of Rhesus Negative Blood Group Among Pregnant Women in Bolan Medical Complex Hospital, Quetta

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Abstract

Objective: To determine the prevalence of Rh D negativity among pregnant women in BMCH, Quetta
Place and duration A ten years retrospective study of rhesus negative pregnant women was carried out at Bolan Medical Complex Hospital, Gynae/obs unit 4, between 1st January 2001-31st December 2010.
Methodology: A 10 –year retrospective study of women who presented for antenatal and in labour for delivery in gynae/obs unit 4, at Bolan Medical Complex Hospital, Quetta from 1st January 2001 to 31st December 2010. Data was obtained from antenatal and labour room registers and was analyzed.
Results: The prevalence of Rh D negative pregnant women was 1.4% in our study. Among them blood group O-ve was most common 36.5% followed by blood group A-ve 31.75%, blood group B-ve 23.76%, and blood group AB 7.98%, respectively. The parity of women ranged from para 0 to 18,with a mean parity of 4.4±3.42 and 90% of them were non booked cases and had no history of anti D antibody injection.
Conclusion: Rhesus D negative alloimmunisation is a preventable disease. We need to have proper antenatal checkups, adequate counseling about Rh D negative blood group and its consequences and make sure the availability of anti-D Ig in hospitals.

Keywords: Pregnancy, Alloimmunisation, Erythroblastosisfetalis, Rhesus-D negative.

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Introduction

The incidence of Rh-negative individuals varies by race, with a low of 1% in Chinese and Japanese to a high of 100% in the Basques, in whom the mutation likely originated. In North American Whites, the incidence of Rh-negative genotype is 15%, and in Blacks it is 7-8%. The overall incidence of alloimmunisation has declined dramatically since the late 1990s owing in part to immunoprophylaxis and smaller families.[1,2]

Transplacental fetal to maternal hemorrhage is the most common cause of alloimmunisation. The rhesus positive baby blood can mix with rhesus negative maternal blood any time during pregnancy due to vaginal bleeding after 20 weeks, a threatened miscarriage, ectopic pregnancy, chirionic villus sampling, amniocentesis, external cephalic version or a blow on tummy and at birth. Heterologous blood transfusion is the second most common cause overall.[3,4,5]

Sensitising is usually not harmful in first pregnancy. It

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causes problem when an Rh negative lady becomes pregnant again with Rh positive fetus. Sensitization can cause erythroblastosis fetalis, hydrops and in severe cases can cause permanent brain damage and neurological problems, such as cerebral palsy, and physical or speech problems.[6,7,8]

The empirical use of Anti-D Ig has been shown to reduce Rh D immunization from 16% of all Rh D negative women to 0.3% of Rh D negative women using anti-D, not only at the well described sensitizing events, but also by the use of routine antenatal anti-D prophylaxis in the last trimester of pregnancy.[9,10]

The aim of this study was to determine the prevalence of Rh D negativity in pregnant women in our population as no such study could be traced in literature.

Methodology

A 10 –year retrospective study of women who presented for antenatal and in labour for delivery in gynae/obs unit 4, at Bolan Medical Complex Hospital, Quetta from 1st January 2001 to 31st December 2010, was conducted. Data was obtained from antenatal and labour room registers as well as from patients' case files at the hospital medical records office and was analysed. All women who presented in labour were included in the study. Information regarding patients' name, age, gestational age, address, occupation, parity, antenatal care received, previous obstetric history, transfusion history, anti-D received, any scan done for fetal anomalies as hydrops, mode of delivery, fetal outcome either alive, stillbirth and signs of hydrops and any previous baby born with hydrops or stillbirth. The ABO and Rh D factor are part of the routine investigations during antenatal booking and in labour room. The blood group of husband was not present in records as it is not done routinely because women are mostly accompanied by family members other than husband. Serial antibody titer levels record was also not available.

Results

During the study period of ten years from 1st January 2001-31st December 2010, a total number of 36,854 deliveries conducted in the gynae/obs unit 4, Bolan Medical Complex Hospital, Quetta, out of which 526 were Rh D blood group negative giving the prevelance rate of 1.4%.Among them blood group O was most common 192(36.5%), followed by blood group A 167(31.75%), blood group B 125(23.76%), and blood group AB 42(7.98%) respectively.(Table I) The parity of women ranged from para 0 to 18 with a mean parity of 4.4±3.42 (Table II) and 90% of them were non booked cases and had no history of anti D antibody injection.

Table I: Distribution of Rhesus blood groups (n=526)

Blood groups	n(%)
O Rh –ve	192(36.5)
A Rh-ve	167(31.75)
B Rh-ve	125(23.77)
AB Rh-ve	42(8)

Table II: Parity of patients n=526

Parity	n(%)
Primigravida	171(32.5)
2nd –3rdgravida	152(29)
4th-5thgravida	97(18.44)
>5thgravida	96(18.3)

There were twenty one sets of twins and one triplet giving a total of 549 babies. out of which 461(84%) were Rh D blood group positive and only 88(16%) were Rh blood group negative.(Table III)

Table III: Baby blood group and outcome n=549

Rh blood group	Alive	Dead	Total
Rh +ve	437(79.6%)	24(4.4%)	461(84%)
Rh-ve	78(14.2%)	10(1.8%)	88(16%)
Total	515(93.8%)	34(6.2%)	549(100%)

There were 12 sets of twins and three triplets

34 (6.2%)were dead intrauterine,10 of them were hydropsfetalis, three were hydroceph.12 of iuds were of primigravida. 298 were male and 251 were female babies.

Discussion

The prevalence of Rh D negative women in Quetta, Baluchistan, in this study is 1.4%. It is comparable to population of India with prevalence of 1.38%, North Western Nigeria 1.2% as reported by Touinssi M et al[11] and Enugu Nigeria 4.5% by Okeke TC et al.[12] Karim F et al[13] reported Rh negative women 13.6% and Rh D positive 86.4% in Southern Pakistan. It shows a wide variation within our country. Bondagji NS[14] reports a

prevalence of 7.5% in Saudi Arabia and Bragner[15] reports 15% in France. On the extreme end 100% of Papua Guinae are Rh D positive and 100% of Basques are Rh D negative, in whom the mutation likely originated.[16,17]

The predominant Rh negative blood group in our study was O-ve 36.5%, followed by A-ve 31.75%, B-ve 23.76%, and AB-ve 7.98%. Karim F et al[13] reported O-ve 30.5% and AB-ve 9.5%. Touinssi M et al[11] had O-ve 39%, A-ve and AB –ve 17% and B-ve 16% in French Basques. Okeke TC et al[12] also documented O-ve as predominant Rh negative blood group 64.5% followed by A-ve 20%, B-ve 12.1% and AB –ve 3.2% respectively.

Ninety percent of our patients were non booked. They had no history of anti-D in previous pregnancies. Most of their deliveries were conducted at home. Still out of 84% Rh D positive babies only (though sad) 10 were hydrops. Intrauterine deaths were 6.2% but they were attributed to other reasons. It may indicate a strong natural protection in our population. We could not screen patients for alloimmunisation due to either non availability of investigation or non affordability. But it has been extensively studied in the world with the frequency being 0.4-2.7% worldwide.[18]

The volumes of cells and therefore the potential to trigger alloimmunisation increases during pregnancy with significant proportion of events causing silent alloimmunisation occurs during the last 12 weeks of gestation.[19] Primigravida were 32.5% and multigravida 67.5% in our study. Karim F et al[13] had 36.7% primis and 63.3% multis. The matter of concern was that there were 12 intrauterine deaths in primigravida with no history of any cause to suggest alloimmunisation. All the Rh negative patients with Rh positive babies were given 1500 IU anti-D Ig within 72 hours of delivery as Kliehaur test for fetomaternal hemorrhage was either not available or very expensive.

To prevent alloimmunisation of rhesus negative mothers carrying a rhesus positive fetus, the National Institute for Health and Clinical Excellence (NICE) recommends that routine antenatal prophylaxis with anti-D Ig should be offered to all RhD negative pregnant women at 28 and 34 weeks of gestation as well as after birth with an Rh positive baby and following events associated with fetal maternal hemorrhage.[20] It is favoured by most resourceful countries but it is not practical in our setup and many other low resourced nations.[21,22,23] Therefore we only give a single dose after delivery once fetus turns out to be Rh positive except when if there had been an event to cause fetomaternal hemorrhage. Even in UK , about 40% of Rh D negative women carry an Rh D negative fetus and thus receive anti-D unnecessarily.[20]

Our study had certain limitations. Being a retrospective study much of vital information was missing from documents. There was no record of husband blood groups. The patients who could not afford anti D or refused it, were not followed. There were 21 sets of twins and one triplet, how these cases were approached remains unanswered. Testing for alloimmunisation was not done due to non availability or financial constraints.

Conclusion

Though the prevalence of Rh D negative population is low compared to the world, its seriousness cannot be denied. Once a mother gets sensitized it's a nightmare for her and the family. Handling a series of intrauterine deaths and an isoimmune child is a challenge. We need to educate people, improve antenatal visits, put in place a proper protocol for the management of Rh D negative women, make sure anti D is available in hospitals round the clock and measures done by government to make it available on low price.

References

1. Carl P Weiner. Fetal Hemolytic Disease. High Risk Pregnancy Management Options. 4th ed. Elsevier Inc; 2011:209-227.
2. Kulinska R. Haemolytic disease of the fetus and newborn/HDFN/ timing in pregnant women and prophylaxis. 2014;53(2):58-63.
3. Drozdowska-Szymczak A, Czaplinska N, Borek-Dzieciol B, Kociszewska-Najman B, Bartkowiak R, Welgos M. [Severe haemolytic disease of the newborn as a result of late and undiagnosed alloimmunisation- a case report. Ginekol Pol. 2014 ;85(3):226-9.
4. Muller SP, Bartels I, Stein W, Emons G, Gutensohn K Legler TJ. Cell free fetal DNA in specimen from pregnant women is stable upto 5 days. PrenatDiagn. 2011:31(13):1300-4.
5. Karanth L, Jaafar SH, Kanagasabai S, Nair NS, Barua A. Anti-D administration after spontaneous miscarriage for preventing alloimmunisation. Cochrane Database Syst Rev. 2013;28:3.
6. Wee WW, Kanagalingam D. The use of anti-D immunoglobulins for rhesus prophylaxis: audit on knowledge and practices among obstetricians. Singapore Med J. 2009 ;50(11):1054-7.
7. Cortey A, Brossard Y. [Prevention of fetomaternal rhesus-D allo-immunisation. Practical aspects]. J GynecolObstetBiolReprod(Paris). 2006;35(1 suppl):1S123-1S130.
8. ShubhraAgarwal, RehanaNajam, H HChowdhary. Prevalence of rhesus negative pregnant population at a tertiary care hospital. Int J Sci 2015; 11(2):67-9
9. De Haas M, Finning K, Massey E, Robert's DJ. Anti-D prophylaxis: past, present and future. Transfus Med. 2014; 24(1):1-7.
10. Al-Joudi FS, Ahmed al-Salih SA. Incidence of Rhesus isoimmunisation in Rhesus-negative mothers in Ramadi, Iraq, in the mid 1990s. East Mediterr Health J. 2000;6(5-6):1 112-5.
11. Touinssi M, Chiaroni J, Degioanni A, De Micco P, Dutour O, Bauduer F. Distribution of rhesus blood group system in the French Basques: a

reappraisal using the allele-specific primers PCR method. 2004. Human Heredity 58(2): 69-72.
12. Okeke TC, Ocheni S, Nwagha UI, Ibeghulam OG. The prevalence of Rhesus negativity among pregnant women in Enugu, Southeast Nigeria. Niger J ClinPract. 2012;15(4):400-2.
13. Karim F, Moiz B, Kamran N. Risk of maternal alloimmunisation in Southern Pakistan- a study in a cohort of 1000 pregnant women. TransfusApher Sci. 2015;52(1):99-102.
14. Bondagji NS. Rhesus alloimmunisation in pregnancy. A tertiary care center experience in the western region of Saudi Arabia. Saudi Med J. 2011 ;32(10):1039-45.
15. Bragner B, Winer N. [Epidemiology of anti-D allo-immunisation during pregnancy]. J GynecolObstetBiolReprod(Paris). 2006;35(1 Suppl):1S87-1S92.
16. Salmon D, Godelier M, Halle L, Lemonnier P, Lory JL, Rouger P, et al. Blood groups in Papua New Guinea Eastern Highlands. Gene Geogr 1988;2:89-98.
17. Cortey A, Brossard Y, Beliard R, Bourel D. [Prevention of fetomaternal rhesus-D alloimmunisation. Perspectives]. J GynecolObstetBiolReprod(Paris). 2006;35(1 Suppl):1S1 19-1S1 22.
18. Pahuja S, Gupta SK, Pujani M, Jain Manjula. The prevalence of irregular erythrocyte antibodies among antenatal women in Delhi. Blood transfuse. 2011; 9(4):388-393.
19. Kotila TR, Odukogbe AA, Okunlola MA, Olayemi O, Obisesan KA. The pregnant Rhesus negative Nigerian woman. Niger Postgrad Med J. 2005;12(4):305-7.
20. Oxenford K, Silcock C, Hill M, Chitly L. Routine testing of fetal Rhesus D status in Rhesus D negative women using cell free fetal DNA: an investigation into the preferences and information needs of women. Prenat Diag. 2013l;33(7):688-94.
21. Duplantie J, Mortinez Gonzales O, Bois A, Nshimyumukiza L, Gekas J, Bujold E, Morin V, Vallee M, Giguere Y, Gagne C, Rouseau F, Reinharz D. Cost-effectiveness of the management of rh-negative pregnant women. J ObstetGynaecol Can. 2013:35(3):730-40.
22. Boulet S, Krause C, Tixier H, Bardou M, Sagot P. Relevance of new recommendations on routine antenatal prevention of rhesus immunization: an appraisal based on a retrospective analysis of all cases observed in two French administrative areas of 3 million inhabitants. Eur J ObstetGynecolReprod Biol. 2009 :146(1):65-70.
23. Pilgrim H, Lloyd-Jones M, Rees A. Routine antenatal anti-D prophylaxis for Rh D negative women: a systematic review and economic evaluation. Health technol Assess. 2009;13(10):11.