

The prevalence of Rhesus negativity among pregnant women in Enugu, Southeast Nigeria

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Abstract

Background: Hemolytic disease of the newborn, secondary to rhesus D (Rh D) iso-immunization, contributes significantly to perinatal morbidity and mortality. Prevalence data in Nigeria, and Southeast Nigeria in particular, is very scanty. This study was carried out to provide our experience in this preventable clinical condition in Enugu, Southeast Nigeria.

Objective: To determine the prevalence and trends of Rh D negativity among pregnant women in Enugu, Southeast Nigeria.

Materials and Methods: A 5-year retrospective study of rhesus negative women was carried out at the University of Nigeria Teaching Hospital, Enugu, Nigeria, between 1st January 2000 and 31st December 2004.

Result: The prevalence rate of Rh D negative women in Enugu, Nigeria, is 4.5%. Out of 6306 women who booked for antenatal care, 282 (4.5%) were Rh D negative women. One hundred and eighty-two (182) (64.5%) of the Rh D negative women were of blood group O followed by blood group A 20%, blood group B 12.1%, and blood group AB 3.2%, respectively.

Conclusion: There is a need for adequate counseling of pregnant women on the importance of Rh D negative factor during the antenatal period in order to prevent hemolytic disease of the newborn.

Key words: Enugu, Southeast Nigeria, pregnancy, rhesus D iso-immunization

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Introduction

The rhesus (Rh D) group system is important in blood transfusion because the Rh D immune response in Rh D negative women is the primary etiology for hemolytic disease of the newborn.^[1] The identification of the Rh D antigen and its description is a cornerstone of modern immunohematology.^[2]

Rh D iso-immunization, a disease of genetic predisposition, has been a focus of concern for obstetricians and hematologists for centuries. Now, there are options for both prevention and management of this historically difficult obstetrics. The frequency of Rh D iso-immunization in the general population continues to be a point of significance for the clinician,^[3] as this significantly contributes to morbidity

and mortality in obstetric practice. Allo-immunization to Rh D is a major factor in perinatal mortality and morbidity, and results in the compromise of the affected women's obstetric career.^[2,4] There is a need for further studies in Rh D (Rh D) negative pregnant women because several factors affect the development of allo-immunization and its prognosis.^[4]

In Nigeria, large-scale studies on women to determine the incidence of Rh D negative women and the prevalence of allo-immunization are unavailable. The pioneer study done by Worledge and colleagues^[5] put the prevalence of Rh D negative status of the Nigerian population at 5% compared to 15% of Caucasians. In a recent work done by Kotila *et al.*,

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at Ibadan, Nigeria, a prevalence of 5% was obtained among the pregnant women.^[4]

The aim of this study was to determine the prevalence and trends of Rh D negativity among pregnant women in Enugu, Nigeria.

Materials and Methods

A 5-year retrospective study of women who booked for antenatal care at the University of Nigeria Teaching Hospital (UNTH) Enugu, Nigeria from 1st January 2000 to 31st December 2004 was carried out. This study was a single tertiary institution retrospective study at the UNTH Enugu. Data was obtained from the antenatal register of the blood bank unit of the Department of Hematology and Immunology. The ABO and Rh D factors are part of the routine investigations during the antenatal booking of women attending the antenatal clinics at the maternity complex of the Hospital. Antibody screenings are routinely performed at booking on Rh D negative women. Serial antibody titer levels are also performed at subsequent visits for those who are Rh D negative. The previous obstetric history, transfusion history, and obstetric findings were noted. Other information including age, religion, tribe, occupation, and social and family history on the booked Rh D negative pregnant women were obtained from their case files and the blood bank records. The Rh D blood group systems of the husbands of women booked for antenatal care is not routinely carried out in the UNTH Enugu unless this is specifically requested by the managing clinicians.

Ethical clearance: NHREC/05/01/200^B. Ethical review and clearance was obtained from the University of Nigeria Hospital Research and Ethics Committee. The study protocol was approved by the hospital review board. Department protocol was via informed written consent prior to data collection.

Results

Six-thousand three-hundred and six (6306) women who booked for antenatal care at UNTH Enugu had their ABO and Rh D blood groups determined as part of their routine investigations at booking. Blood group O 3725 (59.1%) was the commonest blood group, followed by blood groups A 23.2%, B 15%, and AB 2.7%, respectively. The relative percentage of Rh D blood groups in Table 1 shows that 6024 (95.5%) women were Rh D positive while 282 (4.5%) women were Rh D negative. During the period under study, 282 Rh D negative pregnant women were seen. One-hundred and eighty-two of the Rh D negative women (64.5%) were of blood group O followed by blood group A: 57 (20.2%), blood group B: 34 (12.1%), and blood group AB: 9 (3.2%), respectively. [Table 2] One-hundred and twenty (42.6%) of the husbands

Table 1: Distribution of rhesus blood group

Rhesus blood group	Frequency	Percent
Rh D Positive	6024	95.5
Rh D Negative	282	4.5
Total	6306	100

Table 2: Distribution of rhesus negative blood groups among pregnant women in Eastern Nigeria

Rhesus negative blood group	Frequency	Percentage
O Rh D Negative	182	64.5
A Rh D Negative	57	20.2
B Rh D Negative	34	12.1
AB Rh D Negative	9	3.2
Total	282	100

of the Rh D negative women had their Rh D blood groups recorded. One-hundred and fourteen (114) of these husbands were Rh D positive and six (6) were Rh D negative.

Out of the 282 Rh D negative pregnant women, only 2 (0.7%) women had positive antibodies at the initial prenatal visit, 280 (99.3%) were negative, but 12 (4.3%) developed antibodies in the course of the pregnancy. These antibodies were developed from 24 weeks' gestational age. Ten of the babies born to Rh D negative women were severely affected by Rh D iso-immunization. Six of these babies had exchange blood transfusion, and four had satisfactory outcome and are still alive and well. Two babies were fresh stillbirth. Twenty-eight babies had neonatal jaundice with a mean bilirubin level of 6.2 mg/dL, which was mainly unconjugated. Twenty babies had a mean hematocrit of 54.2%. Ten babies had their Rh D groups recorded. Eight were Rh D positive while two were Rh D negative.

At the UNTH, Enugu, Nigeria, routine prophylaxis for Rh D negative pregnant women using Rhogam (Anti D) 500 IU is carried out within 72 h of delivery. Two-hundred and eighty (99.3%) Rh D negative women received Rhogam postpartum while 2 (0.7%) did not receive Rhogam because sensitization had already occurred.

Discussion

The prevalence of Rh D negative women in Enugu, Nigeria, in this study is 4.5%. This is similar to previous studies done at Ibadan and Abraka in Nigeria.^[4,6] This rate shows a low frequency of Rh D negative Rh D blood group system in this environment. This finding is similar to that previously reported amongst African subjects, West Indians, and blacks in Great Britain.^[7,8] The results are, however, different from those reported from the Eastern highlands of Papua Guinea where the entire population was reported to be 100% Rh D positive.^[9]

The Rh D negative blood system is of great clinical significance, especially in medical emergencies where appropriate group compatible blood may not be available. In pregnancy, Rh D negative women whose husbands are Rh D positive need adequate counseling on the etiology of Rh D iso-immunization during the antenatal period to prevent hemolytic disease of the newborn.^[4,7,10] Rh D positive women were more commonly seen than Rh D negative women. No correlation was observed between ABO and Rh D blood groups. The distribution of Rh D blood group system among the women in Enugu, Nigeria, is similar to that seen among other Africans.^[7,8]

This study shows that Rh D iso-immunization is a rare cause of neonatal jaundice among neonates in Nigeria as previously documented.^[7] The contribution of Rh D iso-immunization from this study to perinatal mortality at the UNTH Enugu is 0.7 per 1000 births.

Rhogam is given only as a prophylaxis and is useless once sensitization has occurred. One of the problems militating against effective prophylactic programs against Rh D iso-immunization is that it is very expensive (N 10,000–N 13, 000) (US \$66.67–\$86.67) and many women cannot afford to buy it. This is greatly affecting our prophylaxis programs in this hospital.

This study is limited by the fact that it is a pioneer study on Rh D negativity amongst pregnant women in Enugu with poor (inadequate) documentation of vital information; furthermore, being a retrospective study, unawareness and ignorance of the condition by the hospital staff and population at large.

There is need for proper public education about this preventable disease. Obstetricians, Hematologists, and Neonatologists also need to put in place a proper protocol for the management of Rh D negative pregnant women to prevent Rh D iso-immunization and to properly care for affected children.

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