Rate of RhD sensitisation before and after implementation of a community based antenatal prophylaxis programme

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An editorial in last week's *BMJ* (van Dijk B. Preventing RhD haemolytic disease of the newborn. *BMJ* 1997;315:1480-1) referred to this short report. We regret that it did not appear in the same issue.

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Despite published guidelines in the United Kingdom for the administration of anti-D immunoglobulin to pregnant women at risk of sensitisation to RhD,[1] maternal sensitisation is still between 1% and 1.5%.[2] RhD sensitisation could be reduced by routine antenatal prophylaxis with anti-D immunoglobulin.[3 4] We retrospectively surveyed routine prophylaxis with anti-D immunoglobulin in pregnant women within a community based system of care.

Subjects, methods, and results

All pregnant women in southern Derbyshire who are RhD negative receive anti-D immunoglobulin according to current United Kingdom guidelines.[1] Additionally, since 1990, primigravidas (and those with no living children) who are RhD negative have been offered 500 IU anti-D immunoglobulin prophylactically by intramuscular injection at both 28 and 34 weeks' gestation. Women who need prophylaxis are identified by hospital staff, general practitioners, and community midwives. The blood bank at this hospital despatches anti-D immunoglobulin to community clinics and surgeries, and it receives confirmation of dosing. Patients receiving prophylaxis were identified retrospectively from the blood bank's register.

Each year during the study period, 1988-95, there were about 5000 births; 15.4%-17.4% to women who were RhD negative. During its first full year of operation (1991) the antenatal prophylaxis programme reached about half of the primigravidas who were RhD negative; thereafter the programme reached most RhD negative primigravidas (table). Most patients received anti-D immunoglobulin at both 28 and 34 weeks' gestation, the discrepancy being less than 10% in any one year.

RhD sensitisation was defined as the presence of antibody to D antigen in maternal serum detected during a subsequent pregnancy. During 1988-90, 16 out of 1426 women at risk became sensitised to RhD (overall mean 1.12%), whereas during 1993-5, the earliest any effects of the programme might be detected, four out of 1425 women at risk became sensitised (overall mean 0.28%) (table). This greater than fourfold fall in the sensitisation rate was significant (odds ratio 4.03; 95% confidence interval 1.34 to 12.09). No baby born to a mother given routine antenatal prophylaxis had a positive result in the Coombs test because of RhD antibody.

Of the four women who became sensitised in 1993-5, three had previously delivered in places where routine antenatal prophylaxis was unlikely. The fourth patient had missed the programme during her first pregnancy in 1993; she developed antibodies to D antigen during her second pregnancy (table).

Requests for anti-D immunoglobulin after bleeding from the vagina or antepartum haemorrhage also increased during the study period—508 requests in 1988-90 and 1160 in 1993-5. Finally, Kleihauer test results in 73 out of 4949 (1.48%) women indicated a fetomaternal haemorrhage at delivery or from week 20 of gestation in excess of 4 ml; these patients were therefore given an increased dose of anti-D immunoglobulin.

Coverage of community antenatal prophylaxis against RhD sensitisation and incidence of RhD sensitisation

	Programme coverage			RhD sensitisation		
		Antenatal prophylaxis at:				
Year	No of RhD negative primigravidas *	Week 28	Week 34	No of women at risk†	No of cases	Mean (%) per year
1988	248	0	0	452	5	1.11
1989	256	0	0	465	6	1.29
1990	286	2	2	509	5	0.98
1991	274	155	141	502	5	1.00
1992	273	263	249	473	2	0.42
1993	253	265	272	462	0	0
1994	259	269	260	486	2‡	0.41
1995	265	267	264	477	2§	0.42

*Estimate based on known percentage of RhD negative mothers. †All RhD negative mothers delivering RhD positive babies. ‡One patient had had her previous baby delivered in Malaysia, the other had had her previous pregnancy terminated in Majorca. §One patient had her first pregnancy in 1993 but anti-D immunoglobulin was given only at delivery; antibody to D antigen was detected antenatally in 1995. The other patient had her previous baby delivered elsewhere in the United Kingdom.

Comment

This study confirms previous reports that 500 IU anti-D immunoglobulin administered to primigravidas at 28 and 34 weeks' gestation reduces their chance of sensitisation to RhD.[3 4] The overall sensitisation rate fell significantly from a mean of 1.12% in 1988-91 to 0.28% in 1993-5. Since the four women who became sensitised in 1993-5 had probably not been given routine prophylaxis during their first pregnancy, the programme seems to have been completely effective.

One benefit of the antenatal prophylaxis programme was an increase in requests for anti-D immunoglobulin for bleeding from the vagina or antepartum haemorrhage, possibly because of heightened awareness among midwives and community doctors. This may have contributed to reducing the overall sensitisation rate. The findings also support the continuing measurement of fetomaternal haemorrhage, in accordance with guidelines in the United Kingdom.[1] Published evidence suggests that programmes using prophylactic anti-D immunoglobulin should be cost effective[5] and that extending this to second and subsequent pregnancies warrants consideration.

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