ABO BLOOD GROUPS AND BIRTH WEIGHT

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SUMMARY

ABO blood groups are known to have varying influence on pathogenesis and prognosis of various disorders. Plotkin (1958) concluded that prematurity is common in babies with blood group B while Hurkat & Agarwal (1985) found babies with blood group AB have a tendency of low birth weight. In this study of 1080 consecutive, liveborn babies, AB was the least common blood groups and also the birth weight of babies with AB blood group was the lowest (2398 gms). The difference in birth weight of AB group and other blood groups was found to be statistically significant. Out of these 1080 babies, 626 i.e. 58.0% had the same blood group as their mothers, while the blood groups of the remaining 454 (42.0%) were different.

INTRODUCTION :

Since ABO blood group system was described by Landstiner in 1900, many authors have brought out with varying degrees of certainity a relationship between ABO blood groups and different diseases. Plotkin (1958) found that, babies with blood group B have more incidence of delivering prematurely, while Hurkat and Agarwal (1985) found that babies with blood group AB have lower birth weight as compared to babies of other blood groups.

Human birth weight is influenced by genetic, racial, hereditory, socio-economic and multiple environmental or antenatal factors. Without considering any of these factors and their influence, a possibility of any relation ship between ABO blood group and birth weight was explored in this study.

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Accepted for Publication on 25/7/91

MATERIALS AND METHODS :

In this study, 1080 singleton, consecutive, liveborn babies were selected who were born at B.Y.L. Nair Hospital between January and June 1989. They were consecutive deliveries from 1st January onwards irrespective of period of gestation, mode of delivery or any antenatal complications. Stillborns and babies of multiple pregnancy were excluded from study.

Cord blood was collected from each newborn immediately after birth for blood grouping and baby was carefully weighed on a weighing scale. To reduce errors in weights, the weighing scale was periodically checked for accuracy. Mother's blood group, if not done in ANC clinic, was determined at a convenient time.

Blood group determination was done by a standard method as described by Dermady &

Devenport (1963). In this method red cell suspension was prepared in normal saline and mixed with commercially available anti A and anti B sera in precipitation tubes. Agglutination was checked under microscope.

RESULTS AND ANALYSIS :

Frequency of ABO Blood Groups : In Indian population O and B blood groups are common and equally distributed, while AB is the least common group. In our study results were similar to this observation. (Table I)

Mean Birth Weight : In our study, mean birth weight of blood group B was maximum (2792 gms.) while the mean birth weight of AB group was the lowest i.e. 2398 gms. (Table II)

As seen from Table II, the mean birth weight of blood group A, B and O were comparable while the birth weight of AB group was drastically lower. To find out whether this observed difference in mean birth weights of these groups was significant, a 'Z' test was applied taking two blood groups at a time. A statistically significant difference was found between blood group AB and each of other three blood groups.

TABLE - I

Frequency of ABO Blood Groups

Blood Group	Mothers		Newborns	
	Nos.	%	Nos.	%
A	237	21.94	253	23.42
B	367	33.93	366	33.88
AB	97	08.98	84	07.77
O	379	35.09	377	34.90
Total	1080		1080	

TABLE - II

Mean Birth Weight of Newborns

Blood Group	Number	Mean Birth Weight in gms.	Standard Deviation
A	253	2755	463
B	366	2792	469
AB	84	2398	585
O	377	2765	449

Blood Groups Distribution & Birth Weight : Table III shows as high as 70% babies of each of A, B and O blood groups weighed more than 2.5 kg. while only 42% babies with blood group AB had birth weight more than 2.5 kg. (Table III).

TABLE - III

Blood Group Distribution & Birth Weight

Birth Weight	A		B		AB		O	
1.5 Kg or less	03	(1.18%)	05	(1.36%)	07	(8.33%)	04	(1.06%)
1.55 to 2.5 Kg	73	(28.85%)	97	(26.50%)	41	(48.8%)	99	(26.25%)
2.55 to 3.5 Kg	166	(65.61%)	243	(66.39%)	35	(41.66%)	263	(69.76%)
3.55 Kg & more	11	(4.34%)	21	(5.73%)	01	(1.19%)	11	(2.91%)
Total	253		366		84		377	

DISCUSSION :

Hurkat and Agarwal in 1985, in a study of 779 infants found that AB was the least common blood group and also mean birth weight of babies with AB blood group was lowest. In this study our findings were identical to findings obtained by Hurkat and Agarwal (1985). In 454 cases, blood groups of mothers and infants were different. However, there was no significant difference in mean birth weight due to dissimilarity of blood group.

ACKNOWLEDGEMENT :

We thank Dr. K.D.Nihlani, Dean, T.N.M.C. and B.Y.L.Nair Hospital and Dr.M.Y.Raval, Head of Department of Gynaecology & Obstetrics for allowing us to use hospital data.

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