INCIDENTALLY DETECTED THROMBOCYTOPENIA IN HEALTHY PREGNANT MOTHERS AND THEIR NEONATES AND ITS CLINICAL IMPACT ON MATERNAL AND FOETAL OUTCOME

SHANTI YADAV ● UPMA SAXENA ● V. H. TALIB ● JYOTSNA PANDEY

SUMMARY

In a prospective study on 300 healthy pregnant mothers and their neonates, incidental maternal thrombocytopenia was diagnosed in 33%. It was mild in 23%, moderate in 9% and severe in 1%. The overall incidence of neonatal thrombocytopenia was 7.33%, mild to moderate in 6.66% and severe in 0.67%. The incidence of neonatal thrombocytopenia was 9.1% and 6.4% in infants born to thrombocytopenic and non-thrombocytopenic mothers respectively. No correlation was observed between incidental maternal thrombocytopenia and neonatal cord blood platelet counts. There was no evidence of increased tendency for bleeding disorders in thrombocytopenic mothers or thrombocytopenic neonates at or after delivery. Therefore, this study suggests that maternal and neonatal thrombocytopenia in a normal, uncomplicated pregnancy is an incidental findings and does not warrant any special diagnostic or therapeutic measures. Natural vaginal delivery is safe in these cases.

INTRODUCTION

Incidental (gestational) thrombocytopenia at term in an otherwise normal pregnancy is not an uncommon observation (Burrows and Kelton - 1988). An incidence of 5% to 24% has been reported in earlier studies (Freedman et al 1986, and Hart et al - 1986). Although certain etiological factors of thrombocytopenia in pregnancy such as

Dept. of Obst. & Gyn. Safdarjang Hospital, New Delhi.
Accepted for Publication on 06.07.1994.

pre-eclampsia are unique, the mechanism of low platelet counts in normal pregnancy is similar to that in non-pregnant women (Burrows and Kelton - 1988). The optimal case of a healthy thrombocytopenic mother, remains uncertain, because of the poor correlation between maternal and neonatal platelet counts (Moise et al - 1988). Earlier workers have tried to identify the neonates born to these mothers to be at risk of intracranial haemorrhage (ICH) (Hobbins - 1985 & Moise et al 1988) and have advocated increased use of caesarean delivery to prevent ICH following vaginal delivery (Corloss et al - 1986).

This prospective study was undertaken to determine the incidence of thrombocytopenia in normal pregnant women, relationship between maternal and neonatal platelet counts and its relevance for maternal and foetal outcome.

MATERIALS AND METHODS

This prospective study was carried over a period of 9 months from September 1992 to May 1993 in the Departments of Obstetric and Gynaecology and Laboratory Medicine, Safdarjung Hospital, New Delhi. These cases were divided into two groups, study group (Group I) which comprised of 300 normal term peripartum mothers and their neonates and control group (group II), which consisted of 50 non-pregnant healthy women of reproductive age group. Pregnancy was considered normal, when it was a singleton pregnancy and gestational length was $\geq$ 37 weeks to 41 weeks. Cases with past history of ITP or bleeding disorders, systemic lupus erythematosus or maternal infection, associated medical disorders like PIH, and secondary thrombocytopenia were excluded. Routine laboratory tests done included, estimation of Hb, blood cell counts, platelet counts, blood group, blood sugar and blood urea, VDRL and urine analysis. Platelet count was determined in an electric blood cell counter (automated coulter counter T540) on EDTA blood specimen consisting of 2ml of maternal blood and 7ml of cord blood. All cases with low platelet count were further evaluated by peripheral smear to rule out pseudothrombocytopenia. Thrombocytopenia was diagnosed by conventional criteria of platelet count $<1,50,000/mm^3$. Complete coagulation profile and antiplatelet antibodies (IgG) were determined in all thrombocytopenic mothers. Thrombocytopenic mothers were distributed into 3 groups according to their platelet count, mild (1,00,000 to $<1,50,000/m^3$), moderate (50,000 to 99,000/mm^3) and severe ($<50,000/m^3$). Correlation between the maternal and neonatal platelet counts was determined and its clinical impact for the maternal and foetal outcome was evaluated. No specific treatment protocol was assigned and the treatment was individualised, based on traditional obstetric indications.

OBSERVATIONS AND RESULTS

The age of the women in study and control groups ranged between 15 to 35 years with mean age of 24 years. Parity varied between I to IV and majority 204 (68%) were para II and III. The gestational length was 37-38 weeks in (7%) 38 to 40 weeks in (68%) and 40-41 weeks in (25%).

As shown in Table I, 201 (67%) females had normal platelet count and 99 (33%) mothers had thrombocytopenia. Out of 99 thrombocytopenic asymptomatic mothers, 10% had platelet counts <1,00,000/mm^3 and severe thrombocytopenia was present in 3 (1%). The lowest maternal platelet count observed was 36,000/mm^3. Platelet count was ≥ 1,50,000/mm^3 in all cases of control group. The mean platelet count of 184.13 x 10^9/L and 226.76 x 10^9/L was seen in healthy thrombocytopenic mothers and in non-pregnant women respectively. The coagulation profile was normal in all thrombocytopenic healthy mothers and they were LE cell negative. Anti-platelet antibodies (IgG) could not be detected in any of these thrombocytopenic mothers.

Neonatal thrombocytopenia was seen in 22 (7.33%) neonates (Table I). Out of these 22 neonates, 9 (3%) neonates were born to thrombocytopenic mothers and 13 (4.33%), neonates were born to non-thrombocytopenic mothers (Table II). The lowest neonatal platelet count seen in cord blood was 26,000/mm^3.

As shown in Table II, infants born to 99 thrombocytopenic mothers, 9 (9.1%) neonates had mild to moderate thrombocytopenia. In 201 non-thrombocytopenic mothers, 13 (6.4%) infants were born with thrombocytopenia and out of these 13 infants, severe thrombocytopenia was present in 2 neonates. Mode of delivery was not affected by the platelet count of the mother. Out of 99 thrombocytopenic mothers, 88 had spontaneous vaginal delivery, 8 had forceps delivery and 3 mothers underwent caesarean section, done for traditional obstetric indications. No tendency for increased bleeding disorders at or after delivery was observed in any of these mothers. Out of 22 thrombocytopenic infants, 17 were

Table I

Distribution of cases in study group and control group, according to the platelet count

Platelet count (x10^9/L)	Study group		Control (N=50)
	Maternal (N=300) No. of cases (%)	Neonates (N=300) No. of cases (%)	No. of cases (%)
< 50	3 (1)	2 (0.67)	0
50-99	27 (9)	10 (3.33)	0
100- < 150	69 (23)	10 (3.33)	0
≥ 150	201 (67)	278 (92.67)	50 (100)

Only 67% healthy mothers had normal platelet counts, where as platelet count was normal in 92.67% of the infants born to these mothers.

Table II

Correlation of platelet counts in 22 thrombocytopenic neonates with the maternal platelet counts

Maternal Platelet count ($x\ 10^9/L$	Total No. of Mothers	Neonatal platelet count (N=22) < 50	50-99	100.<150	No. of Neonates (%)
Thrombocytopenic mothers					
< 50	3	0	0	1	1 (.33)
50-99	27	0	1	1	2 (0.67)
100-<150	69	0	3	3	6 (2)
Non-thrombocytopenic mothers					
≥150	201	2	6	5	13 (4.33)
Total No. of cases	300	2	10	10	22 (7.33%)

Out of 22 thrombocytopenic infants, 9 (3%) were born to thrombocytopenic mothers and 13 (4.33%) were born to non-thrombocytopenic mothers. Both the neonates with severe thrombocytopenia were born to Non-thrombocytopenic healthy mothers.

born by spontaneous vaginal delivery, 2 were delivered with forceps application and 3 were delivered by caesarean section, performed for traditional obstetric indications. Both the neonates with severe thrombocytopenia were born vaginally. No evidence of ICH or any other general haemostatic defect was observed in any of these infants at birth or in the neonatal period. Foetal status, regarding meconeum staining, intrapartum foetal distress or birth weight, did not show any correlation with the neonatal platelet counts in the cord blood.

DISCUSSION

Pregnancy is a compensated state of progressive platelet destruction resulting in low platelet counts, hence incidentally detected thrombocytopenia in normally pregnant women is not an uncommon observation (Tygart et al 1986). ITP, a disease of young females is frequently diagnosed for the first time during pregnancy (Aster - 1990). In ITP maternal anti-platelet antibodies (IgG) are transfused through the placenta to the foetus, resulting in foetal platelet destruction and hence foetal thrombocytopenia (Scott - 1983). These severely affected foetuses are at a greater risk of

Intracranial haemorrhage during vaginal delivery. Differentiation between incidental (gestational) thrombocytopenia and ITP, is not always possible, even after determining maternal anti-platelet antibodies and hence the actual risk of foetal/neonatal ICH posed by incidental maternal thrombocytopenia can't be predicted (Burrows & Keltone 1988). In this study thrombocytopenia was detected in 33% healthy term pregnant females at the time of delivery. Mild to moderate thrombocytopenia was present in 32% and platelet count <1,00,000/mm^3 was been seen in 10%. Similar incidence of 24% of incidental thrombocytopenia has been reported by Hart et al (1986), although much lower incidence has been reported by others (Freedman et al 1986; Mathew et al 1990). Decrease in the mean platelet count in normally pregnant thrombocytopenia mothers observed in this study is in agreement with the observations made by Freedman et al (1986) and mathews et al (1990). General incidence of neonatal thrombocytopenia in this study was 7.33% with 3% and 4.33% thrombocytopenic infants, born to thrombocytopenic and non-thrombocytopenic healthy mothers respectively. Form these observations, it appears that no correlation exists between maternal and foetal platelet counts, and same has been documented by Burrows & Kelton (1988) & Pillai (1993) to thrombocytopenia mothers in infants born.

The incidence of neonatal thrombocytopenia of 9.1% was higher than the incidence of neonatal thrombocytopenia of 6.4% in infants born to non-thrombocytopenic mothers. Burrows and Kelton (1990) also observed that the incidence of neonatal thrombocytopenia (7.9%) was slightly higher in infants born to thrombocytopenic healthy mothers than in infants born to non-thrombocytopenic mothers (5.9%). In view of the fact that the incidence of neonatal thrombocytopenia in infants of healthy thrombocytopenic mothers (9.1%) is nearly similar to the general incidence of neonatal thrombocytopenia (7.33%), use of invasive prenatal and intranatal obstetric interventions to improve the foetal outcome is not indicated, though advocated by previous authors (Hobbins et al - 1985, Moise et al - 1988). Mode of delivery did not affect the maternal and the neonatal morbidity adversely. Same has been observed in earlier studies (Aster 1990, Pillai 1993).

As has been observed in this study and in earlier series also, incidentally detected thrombocytopenia is mild in majority cases and is a benign condition, hence no special obstetric interventions are required to treat these mothers. It appears that maternal thrombocytopenia in normal pregnancy is an incidental finding and no correlation exists between maternal and neonatal platelet counts and hence it does not warrant special obstetric management.

REFERENCES

1. *Aster R.H. : N. Engl. J. Med. : 323;264;1990.*
2. *Borrows R.F. and Kelton J.G. : N. Engl. J. Med. : 319;142;1988.*
3. *Burrows R.F. and Kelton J.G. : Am. J. Obstet. Gynec. : 162;731;1990.*
4. *Borrows R.F. and Kelton J.G. : Am. Obstet. Gynec. : 163;1147;1990.*
5. *Carloss HW, Mc Millan R, Crosby W.H. : J.A.M.A. : 244;2756;1980.*

6. *Freedman J., Musclow E., Garvey B. : Am. J. Haematol : 21;397,1986.*
7. *Hart D., Dunetz C., Nardi M., Porges R.F., Weiss A., Karpatkin M. : Am. J. Obstet. Gynec. : 154;878;1986.*
8. *Hobbins J.C., Grannum P., Romeo R., Reece EA, Mahoney : Am. J. Obstet. Gynec. : 152;1;1985.*
9. *Mathews J.H., Benjamin S., Gill D.S., Smith N.A. : Acta Haematol (Basel) : 84;24;1990.*
11. *Moise K.J., Jr. Carpenter R.J., Jr. Cotton D.B., Wasserstrum N., Kishon B., Canon L. : Obstet. Gynecol. : 72;346;1988.*
12. *Scott JR, Rote N.S., Cruikshank D.P. : Am. J. Obstet. Gynec. : 145;932;1983.*
13. *Pillai M. : Brit. J. Obstet. and Gynec. : 100;201;1993.*
14. *Tygart SG, Mc Royan DK, Spinnato JA, McRoyan CJ, Kitay D. : Am. J. Obstet. Gynec.: 154;883;1986.*