

Detection of Fetomaternal Hemorrhage in Postpartum Cases: A study of 500 cases.

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A study of 500 postpartum subjects was carried out in Services hospital and General hospital Lahore. Fetomaternal hemorrhage (FMH) is quite common in our setup with an overall frequency of 15.4%. Subjects undergoing cesarean section, manual removal of placenta, forceps delivery and those who are primigravida have a higher frequency of FMH. The volume of FMH was less than 5ml in 98.3% of the positive subjects and only one case had an FMH of 10.23ml.

Key words: Fetomaternal haemorrhage, postpartum

Fetomaternal hemorrhage is the passage of fetal blood through the placenta into the maternal circulation. It may occur at any time during pregnancy but its frequency and volume is high at the time of delivery². It may effect the fetus in two ways:

First by blood loss thus causing fetal death, fetal distress or neonatal anemia depending on the volume of blood lost.

Second in Rh negative mother with an Rh positive fetus by causing sensitization of the mother, the antibodies so formed can cross the placenta during a subsequent pregnancy with Rh-positive fetus and cause massive hemolysis leading to hemolytic disease of newborn.

FMH can be estimated by Kleihauer's acid elution test. In this test the adult red cells appear empty while fetal red cells appear as pink stained discs. The estimation of FMH is important not only to see the volume of blood lost from fetus but also to decide the dose of anti-D injection to be given to an Rh-negative mother with Rh positive fetus. The dose of anti-D injection is 25 microgram per ml of fetal red cells in the maternal circulation as recommended by WHO (1971).

The frequency and volume of FMH is different in each community and a background rate of 5-40% has been given³. Cesarean section, manual removal of placenta, forceps delivery and any other manipulative procedure at the time of delivery are the high risks factors which increase the incidence and volume of FMH. The present study was designed to see the frequency of FMH in postpartum cases. It was intended to see the high risk factors in our setup.

Patients and Methods

The study was carried out in the pathology department of Postgraduate Medical Institute Lahore. A total of 500 subjects were selected from departments of Obstetrics and Gynecology of services hospital Lahore. All the postpartum cases were included and blood samples were taken within four hours of delivery from the subjects who were otherwise healthy. Blood grouping was done. Kleihauer test was performed on the slides prepared from the samples. Adult blood and cord blood was used to prepare control slides.

The volume of FMH was calculated by the following formula⁷

$$\frac{\text{number of fetal red cells / 50HPF}}{\text{number of adult red cells / 50HPF}} = \frac{\text{Volume of FMH}}{\text{Volume of maternal blood}}$$

Maternal blood was calculated as 65ml per Kg of body weight⁶

Results:

Out of 500 subjects tested 77(15.4%) were positive with Kleihauer test⁵ i.e they were having FMH. Out of 348 subjects with simple delivery 48(14.08) were positive for FMH. 150 subjects had cesarean section and in them 28 (18.66%) were positive. Out of 166 subjects with manual removal of placenta 30(18.07%) were positive. While of the two subjects with forceps delivery one (50%) was positive with Kleihauer test.

Percentage of cases positive with Kleihauer test(FMH).

Overall Frequency	15.4%
Simple delivery	14.08%
Cesarean section	18.66%
Forceps delivery	50%
Spontaneous removal of placenta	14.07%
Manual removal of placenta	18.07%
Primigravida	17.72%
Multigravida	14.32%

Discussion

Kleihauer's acid elution test was introduced in 1957. With this test the adult haemoglobin is eluted while fetal haemoglobin resists this elution, thus red cell containing adult haemoglobin appear as empty (ghosted) and cells containing fetal haemoglobin appear as red shining discs. Soon it was used to identify fetal red cells in the maternal blood, later labelled as fetomaternal hemorrhage (FMH). The real importance of FMH was felt in the early sixties when Finn (1960)⁴ described its association with hemolytic disease of newborn. He also described the possibility of its prevention by using suitable antibodies. His dreams came true in the same decade when the introduction of prophylactic anti-D injection shifted the attention to complete prevention of the disease. The anti D injection

causes clearance of fetal red cells before they can cause sensitization of mother. The volume of FMH is variable in each case and an adequate dose of anti-D is essential to affect complete clearance of fetal red cells.

WHO (1971) has stressed to estimate the volume of FMH in each rhesus negative mother with an Rh-positive fetus and give the injection of anti-D as 25 microgram/ml of fetal red cells.

In the present study only 15.4% of mothers had an FMH and of these mothers 98% had an FMH of less than 5ml. Only one case was detected with an FMH of 10.23 ml. The frequency of FMH was high in cases of Cesarean section, manual removal of placenta, forceps delivery and primigravida mothers. Estimation of the volume of FMH is suggested in every Rhesus negative mother to calculate the dose of anti-D injection given as a prophylaxis for hemolytic disease of newborn.

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