

A COMPARATIVE STUDY OF FETOMATERNAL TRANSFUSION IN CASES OF ABORTIONS AND MTP'S

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SUMMARY

100 cases of MTP by 5 different methods (M. R. Syringe, suction evacuation, extra-amniotic ethacridine lactate, intra-amniotic saline and intramuscular PGF₂), 25 cases of threatened abortion, by Kleihauer's technique and FMT was calculated. It was observed cases (total 175) were studied. Peripheral blood films were stained by Kleihauer's technique and FMT was calculated. It was observed that the incidence of FMT increased tremendously after curettage for incomplete abortion as compared with threatened abortion patients. Of the 5 different method used, there was no FMT with MR syringe, whereas it was maximum with intra-amniotic saline (Mean spill of 5 ml in a total of 30% cases). Also the mean trans-placental spill was 5 times more in 2nd trimester M.T.P's than in 1st Trimester, thus signifying the importance of early M.T.P's.

Introduction

TPH as a cause of Rh isoimmunization was first postulated by Levine *et al* (1941). Chown (1954) proved the validity of Levine's hypothesis by demonstrating the presence of fetal erythrocytes in maternal circulation. The passage of fetal cells into the maternal circulation results in sensitization and immunization of the mother. Once the mother has become immunised, these antibodies will remain in her serum for the most, if not all of the life. These antibodies pass across the placenta in

subsequent pregnancies and work havoc on the erythrocytes of Rh-positive fetus thus resulting in hemolytic anemia of the newborn, icterus gravis neonatorum and hydrops fetalis.

TPH has been known to occur after delivery, caesarean section, external cephalic version, aminocentesis etc. Abortions and Medical termination of pregnancies have also been recently implicated as responsible for causing isoimmunisation. Following the legalization of abortions, the incidence of MTP's has increased tremendously. Before doing MTP on a Rh-negative patient we must be aware of the risk of isoimmunisation. Also, we should know which method causes least FMH.

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The present work was done with the aim to find the safest method of MTP for Rh-negative women.

Material and Method

One hundred and seventy-five women were studied. They were grouped as follows :-
GROUP-I: 25 Women admitted with the diagnosis of threatened spontaneous abortion and who continued with their pregnancy.

GROUP-II: 25 Women of incomplete spontaneous abortion who needed evacuation for the completion of abortion.

GROUP-III: 100 women admitted for medical termination of pregnancy. These were further grouped depending upon method of MPT used.

- (a) MR Syringe — 20 cases
- (b) Suction evacuation — 10 cases.
- (c) Extra-amniotic ethacridine lactate — 20 cases.

(d) Intra-amniotic hypertonic saline — 20 cases.

(e) Intramuscular prostaglandin (PGF 2x) — 10 cases.

GROUP: 25 women undergoing curettage for non-obstetrical reasons (control)

Peripheral blood films were made from these women within 6 hours of MTP curettage. The slides were stained by the acid-elution technique of Kleihauer & Betke (1957). These slides were fixed in 80% alcohol for 5 minutes, were then washed gently with distilled water and air dried. They were immersed in citrate-phosphate buffer at pH 3.2-3.3 at 37°C for 5-10 minutes. The slides were washed gently with distilled water and stained with acid-hematoxyline for 5 minutes after which they were again washed in distilled water gently. They were stained with eosin for 5 minutes, washed in running water for one minute, dried and mounted under dry cover slip.

Observations

TABLE I
TPH (Amount and Incidence) in Different Groups

Group	No. of patients studied	Positive for fetal cells	Per cent positive	Mean hemorrhage (in ml)
1. Threatened abortions	25	3	12.0	0.8
2. Incomplete abortions (after curettage)	25	11	44.0	7.3
3. MTPs	100	24	24.0	2.1
Methods				
a. M.R. Syringing	20	0	0	0
b. Suction evacuation	20	4	20.0	1.3
c. Extra amniotic ethacridine lactate	20	8	40.0	2.5
d. Hypertonic saline (Intra-amniotic)	20	6	30.0	5.0
e. Prostaglandins (Intra muscular)				
PGF 2x	20	6	30.0	1.3
4. Control	25	0	0	0

TABLE II
(Incidence and Amount) of FMH in Relation to the Period of Gestation

Trimester	No. of cases	Positive cases	Per cent positive	Mean hemorrhage (ml)
First	40	4	10	0.65
Second	60	20	33.3	2.93
Total	100	24	24.0	2.1

The counting of the fetal cells in relation to adult ghost cells (RBC) was done and the percentage of fetal cells was calculated. The amount of hemorrhage was calculated by Kleihauer's formula.

TPH = Ratio of fetal cells to adult red cells expressed as percentage X 50
(Grobellaar & Dunning 1969).

Discussion

Any disturbance at the choriodecidual junction favours the passage of fetal blood cells into the maternal circulation. Curettage increases the incidence and amount of FMT because of the same reason. These embryonic cells entered the circulation of Rh-negative women in sufficient quantity that can possibly evoke immune response and the earliest possibility of this occurring is 6-8 weeks.

The onset of vaginal bleeding during pregnancy (i.e. threatened abortion) also causes some breach at the delicate chorio-decidual junction, thus facilitating EMT. 12% of women who threatened to abort had FMT. Similar results have been found by Fraser *et al* (1962).

After curettage for completion of incomplete abortion, the incidence of FMT was found to be very high. 44% had a mean spill of 5.9 ml. Katz (1969) had a similar incidence (45%), while Ramanan *et al* (1980) noted FMH in 56.6% women.

In 50 women who underwent MTP by different methods, FMH averaging 2.1 ml

was found in 24% women. None of the women undergoing MR syringe, had any spill. Mukerji *et al* (1975) also could not find any FMH after MR-syringe, while Ramanan *et al* (1980) found FMH in 15.6% women after the same procedure.

With S&E, 20% had FMH. Same incidence was found by Bakshi *et al* (1979), while Voigt *et al* (1969) were able to detect fetal cells in 33.3% cases.

Amniocentesis, being a blind process may result in a bloody tap causing damage to the placental site and the leakage of fetal cells into the circulation. The present study revealed a mean spill of 5 ml. with intra-uterine saline. This was double the spill, found with extra-amniotic ethacridine lactate (2.5 ml.) It emphasises the statement made by Zipursky *et al* (1963) that care must be taken in selecting the site of amniocentesis lest a bloody tap results in placental trauma.

With the use of extraamniotic ethacridine lactate in our study, 40% had FMH. Voigt *et al* (1969) postulated that its injection into chorio-decidual space results in some disruption of feto-maternal barrier. At the same time it provides a temporary positive pressure gradient across to open maternal venous channels.

Regarding the relation of FMT to the period of gestation, Loke (1978) postulated that type of termination was probably of less importance than the stage of pregnancy when it was terminated. It is to be expected because the larger the area of contact between the placenta and uterus, the greater

would be the chance of TPH after the placenta is separated. In this study, the mean FMH during the second trimester was five times than seen in the first trimester. Same results were given by Ramanan *et al* (1980) and Simonovitis *et al* (1971). They postulated that the amount of FMH increased with increasing period of gestation because of the development of complete umbilical circulation and the intact placenta.

Conclusion

The present study showed that FMH occurred in threatened abortions and Medical termination of pregnancies. This spill was significantly more after curettage, after amniocentesis and with the increasing period of gestation. It was maximal when termination was done with intra-amniotic saline. MR syringe proved to be the safest method. And the earlier it is done in pregnancy, the better it is for the patient. Curettage should be gentle and minimum as far as possible.

Thus it confirms that the autoimmune hazards area possible sequelae of induced abortion. Blood grouping and typing is thus mandatory before termination of pregnancy.

FMH must be calculated in all Rh-negative patients after abortions and MTPs so that anti-D can be given accordingly. Need of anti-D immunoglobulin for preventing immunization after an induced abortion is as important as at term pregnancies.

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