

**A STUDY OF BLEEDING TIME, CLOTTING TIME, CLOT RETRACTION
PLATELET COUNT AND PLASMA FIBRINOGEN IN CASES OF
MID-TRIMESTER TERMINATION OF PREGNANCY BY H.S.A.I.†**

by

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Stander *et al* (1971) noted sporadic cases of bleeding diathesis after hypertonic saline intra-amniotic infusion (HSAI) leading to death. He noticed a decrease in platelet count and fibrinogen and an increase in euglobulin clot lysis time after infusion, which returned to normal after abortion. Cohen and Ballard (1973) found that when abortion was augmented by oxytocin, there was a five fold increase in clinically observed disseminated intravascular coagulation (DIC). With these observations in view, the present study was undertaken.

Material and Methods

The present study was carried out in the Departments of Obstet. & Gynaecology and Biochemistry of Medical College, Jabalpur from November 1977 to October

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1978. 25 cases undergoing mid-trimester termination of pregnancy by HSAI were studied. Bleeding time was estimated by Duke's method, clotting time by Dale and Laidlow's method, clot retraction by Westerby's method, total platelet count by Rees and Ecker's method, and plasma fibrinogen by Biuret method.

Observations

Oxytocin was used to augment uterine contractions in 17 cases. In 5 cases it was given within 2-12 hours after HSAI, and in 12 cases within 13-24 hours after HSAI. In 8 cases no oxytocin was used. The average induction-abortion interval in these three groups was 24.4 hours, 29.3 hours, and 23.8 hours respectively.

Table I shows the bleeding time, Table II clotting, Table III clot retraction, Table IV total platelet count and Table V plasma fibrinogen before 6 and 24 hours after HSAI and at the time of abortion in these cases.

32% cases had fever, 8% had sepsis, 84% had incomplete abortion. Three cases (12%) had haemorrhage which was due to trauma to cervix. None of these cases required blood transfusion or developed DIC.

TABLE I
Bleeding Time (in seconds)

	Before infusion	After infusion					
		6 hrs.	p.c.	24 hrs.	p.c.	at abortion	p.c.
Mean	48	56.4	21.45	54.2	16.5	50	6.04 ↑
S.D.	17.49	23.72		19.37		21.06	
S.D. of mean		8.40		6.20		2.00	
S.E.		5.89		5.21		5.47	
S/NS		N.S.		N.S.		N.S.	
<i>Effect of oxytocin</i>							
in 2-12 hours	45	48.0	13.3	45.0	5.0	45.0	5.0 ↑
12-24 hours	44.6	57.5	27.0	52.0	19.7	46.25	2.4 ↑
No oxytocin	52.5	60.0	18.1	61.87	19.1	78.75	15.28 ↑

S=Significant N.S.=Not significant

TABLE II
Clotting Time (in seconds)

	Before infusion	After infusion					
		6 hrs.	p.c.	24 hrs.	p.c.	At abortion	p.c.
Mean	150.60	195.0	30.0	171.0	11.30	154.30	0.0
S.D.	31.8	45.3		40.69		41.86	
S.D. of mean		44.40		20.40		3.70	
S.E.	11.06	30.32		10.51		0.00	
S/NS		significant		significant		not significant	
<i>Effect of oxytocin</i>							
in 2-12 hrs.	150.0	207.0	50.42	162.00	6.0	138.0	4.0
12-24 hrs.	145.0	167.5	37.83	172.08	18.7	152.50	7.6
No oxytocin	159.3	183.75	16.5	176.25	5.37	163.12	5.6

TABLE III
Clot Retraction (in per cent)

	Before infusion	After infusion					
		6 hours	p.c.	24 hours	p.c.	At abortion	p.c.
Mean	53.8	50.30	7.15	53.20	0.61	54.54	0.67
S.D.	5.78	6.62		6.56		4.77	
S.D. of mean		3.53		0.60		0.74	
S.E.		1.75		1.74		1.49	
S/NS		significant		not significant		not significant	
<i>Effect of oxytocin</i>							
in 2-12 hrs.	48.4	50.6	0.31	53.18	16.1	54.8	10.10
12-24 hrs.	55.66	49.2	11.32	52.77	03.10	54.03	2.64
No oxytocin	57.0	57.0	0.0	55.0	3.5	58.0	1.75

TABLE IV
Total Platelet Count (in million/cu.mm)

	Before infusion	After infusion					
		6 hrs.	p.c.	24 hrs.	p.c.	At abortion	p.c.
Mean	303.8	248.3	17.32	260.2	13.12	286.4	12.9
S.D.	56.82	60.69		54.89		54.32	
S.D. of mean		55.50		43.6		14.60	
S.E.		16.62		15.80		15.12	
S/NS		significant		significant		not significant	
<i>Effect of oxytocin</i>							
in 2-12 hours	284.0	214.0	20.5	244.0	10.95	252.0	8.17
12-24 hours	305.8	249.5	18.6	245.4	18.3	279.13	12.3
No oxytocin	319.37	267.5	17.37	292.5	8.31	318.7	0.85

TABLE V
Plasma Fibrinogen (in mg%)

	Before infusion	After infusion					
		6 hrs.	p.c.	24 hrs.	p.c.	At abortion	p.c.
Mean	464.08	329.25	42.90	394.53	14.41	421.24	10.39
S.D.	92.79	127.61		103.89		60.00	
S.D. of mean		134.83		69.55		43.44	
S.E.		31.55		27.85		31.35	
S/NS		significant		significant		not significant	
<i>Effect of oxytocin</i>							
in 2-12 hrs.	499.56	334.86	32.27	418.94	16.41	423.9	15.4
12-24 hrs.	447.52	340.45	28.45	398.69	15.32	441.3	8.18
No oxytocin	440.3	268.12	36.98	365.22	17.4	387.3	11.87

Comments

Bleeding time rose after HSAI, but this rise was not statistically significant. Clotting time showed a significant rise 6 hours after HSAI, thereafter the rise was not statistically significant. The clot retraction fell significantly 6 hours and 24 hours after HSAI. This was parallel with the fall in total platelet values, which also showed a fall 6 hours and 24 hours after HSAI. The fall in these values was more significant in patients who were given oxytocin infusion. These values started rising 24 hours after HSAI.

Plasma fibrinogen values showed statistical fall 6 hours and 24 hours after HSAI, though the fall at the time of abortion was not statistically significant. The fall in plasma fibrinogen was maximum 6 hours after HSAI. Platelets and fibrinogen both rose after the initial fall, platelets, rather, slowly than fibrinogen.

There was no correlation between the decrease in coagulation factors and the latent period or time of abortion, and oxytocin infusion did not produce a bigger fall in platelets and fibrinogen. With increase in induction-abortion interval the

coagulation factors tend to return to normal.

After HSAI the foetal death takes place between 30 minutes to 2 hours (Stander, *et al*). This disintegration of foeto-placental unit may lead to coagulopathy. This may also explain the coagulopathy in patients who abort early after oxytocin infusion.

Beller, *et al* (1972) suggested that the presence of salt is responsible for bleeding disorder, which is then triggered by the infusion of thromboplastic material in the maternal circulation.

It is, thus, observed that though there was a sub-clinical coagulopathy in most of the cases of present series, yet, none showed any sign of DIC, or, had biochemical evidence of severe fall in coagulation factors at the time of observation.

Summary

Bleeding time, clotting time, clot retraction, total platelet count and plasma fibrinogen were studied in 25 cases

undergoing mid-trimester abortion by HSAI.

The observations were made before infusion, 6 hours and 24 hours after infusion and at the time of abortion.

Though there was evidence of sub-clinical coagulation defect, none of the patients showed DIC.

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References

1. Beller, F. K., Rosenberg, M., Kolker, M. and Douglas, G. W.: *Am. J. Obstet. Gynec.* 112: 534, 1972.
2. Cohen, H. and Ballard, C.: *Am. J. Obstet. Gynec.* 43: 300, 1973.
3. Stander, R. W., Fless, H. C., Glueck, H. I. and Kisker, C. T.: *Obstet. Gynec.* 37: 660, 1971.