

PROTHROMBIN TIME IN NORMAL PREGNANCY AND TOXAEMIA OF PREGNANCY

by

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Introduction

Haemorrhagic disorder during pregnancy is a difficult problem to treat. Equilibrium between the coagulation system and the lytic system help to keep the blood in liquid form. The mechanism of clotting system is the formation of thrombin from prothrombin which transforms fibrinogen into fibrin. The mechanism of lytic system is the enzyme fibrinolysin, which is formed from profibrinolysin, leads to a lysis of fibrin or even of fibrinogen. (Guyton, 1976).

Much work has been done on all the aspects of coagulation during normal pregnancy and its disorders e.g. bleeding time, clotting time, platelet count, platelet adhesiveness, fibrinogen level and fibrinolytic activity, but after reviewing the available literature it was found that very little work was done on prothrombin.

Fibrinogen levels are increased during normal pregnancy and labour but these levels decrease significantly in toxæmia of pregnancy (Dass and Sircar, 1968; Mehta and Anjaneyulu, 1976; Hakim and Apte 1976; Agrawal and Buradkar, 1978). This decrease is explained on the ground that fibrinogen is utilised in excess in dis-

seminated intravascular coagulation which is the basic pathology of toxæmia. Therefore, it was presumed that same thing may be true for prothrombin.

Material and Method

Women attending antenatal clinic at Medical College Hospital Aurangabad, were taken for the study. Fifty-two cases were studied. Thirty cases were of normal pregnancy and formed the control group and 22 were having toxæmia of pregnancy. All cases were of third trimester. Prothrombin time in every patient was determined by Quick's method (1932) using Russel Viper Venom.

Observations

All the cases are analysed as follows:

Discussion

Prothrombin is a plasma protein formed in the liver. Its molecular weight is 68,700 and its normal blood level is about 15 mg. per 100 ml. It has got an indispensable role in initiating the clotting process. Prothrombin activity can be measured by 2 methods. (i) direct measurement of prothrombin concentration and (ii) an indirect method by determining the prothrombin time, which is in inverse proportion with prothrombin concentration. In the present series the mean prothrombin time in control group was 11.2 secs (3—30 secs). In mild pre-eclamptic

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TABLE I
Age and Parity Distribution of Control and Toxaemic Cases

Age (years)	Number of cases		Parity	Number of cases	
	Control	Toxaemia		Control	Toxaemia
16-20	12	8	Zero	15	8
21-25	13	8	1	7	7
26-30	4	5	2	7	4
31 & above	1	1	3 & above	1	3
Total	30	22	8	30	22

TABLE II
Mean Prothrombin Time in All Cases

Cases of	No. of cases	Mean Prothro. time (secs)
Control	30	11.2
Toxaemia-Mild	9	6.7
Moderate	8	14.7
Severe	5	14.4

toxaemia mean prothrombin time was 6.7 secs. (4-11 secs.), in moderate toxaemia it was 11.75 secs. (6-37 secs.) and in severe variety it was 14.40 secs. (8-25 secs.). The probability value exceeds 0.1 in all the three varieties. Therefore, the change in prothrombin time is found to be insignificant as compared to normal pregnant women. These results are in comparison with other authors as shown in Table IV.

TABLE III
Statistical Analysis of Prothrombin Time in Control and Toxaemic Cases

Cases	n	Prothrombin time			PS	t value	DF	P
		Range (secs)	Mean (secs)	SD				
Control	30	3-30	11.2	8.392	—	—	—	
P.E.T.-Mild	9	4-11	6.7	2.588	7.527	1.570	37	>0.1
Moderate	8	6-37	14.75	10.640	8.876	1.005	36	>0.1
Severe	5	8-25	14.40	6.800	8.216	0.805	38	>0.1
All cases of Toxaemia	22	4-37	14.40	8.002	8.231	0.086	50	>0.1

n = Number of cases
S D = Standard deviation
P = Probability.

PS = Pooled Standard Deviation
DF = Degree of Freedom

TABLE IV
Comparison of Prothrombin Time Given by Other Authors

Author	Normal Pregnancy	Pre Eclamptic Toxaemia			
		mild	moderate	severe	Eclampsia
Hakim and Apte (1976)	16.0 (15-18)	19.0 (18-23)	— —	20.0 (19-23)	18.0 (18-19)
Agrawal and Buradkar (1978)	16.9 (15-19)	18.8 (18-23)	— —	20.0 (18-23)	18.6 (18-20)
Present Series (1979)	11.2 (3-30)	6.7 (4-11)	14.75 (6-37)	14.4 (8-25)	— —

All figures show prothrombin time in seconds.
Figures in bracket shows range.

Summary and Conclusion

Total 52 cases were studied, out of which 22 were with toxaemia and 30 were of normal pregnancy. No significant change was observed in prothrombin time of normal pregnant and toxaemic women.

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