

BLOOD COAGULATION STUDIES IN PRE-ECLAMPSIA

by

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Introduction

Pre-eclampsia and eclampsia are considered as the diseases of theories and the exact knowledge is still lacking. One theory is that it is due to widespread intravascular coagulation depleting the blood coagulating factors. If this theory is true, properly timed heparin therapy should be of beneficial value in treatment of pre-eclampsia. Hence we thought of studying the blood coagulation factors in cases of pre-eclampsia.

Material and Methods

Twenty women with pre-eclampsia (Group I) and 20 normal pregnant women matched with cases of group I for age, parity and duration of pregnancy (Group II) were selected for blood coagulation study. All cases of pre-eclampsia

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had blood pressure reading 140/90 mm. of mercury or more and were associated oedema or albuminurea. Women in both groups were from 18 years to 35 years of age with parity varying from 0 to 5 and the period of gestation varying from 26 to 38 weeks. The various blood coagulation parameters and the method of the study are as shown below.

I. Prothrombin time—Quick (1935).

II. Partial thromboplastin time and thrombin time—Biggs (1972).

III. Platelet count — Brecher and Cronkite (1950).

IV. Serum fibrinogen—Quick (1935).

V. Euglobulin clot lysis time—Buckell (1958).

VI. Platelet aggregation—Born (1962).

VII. Platelet adhesiveness—Mackenzie *et al* (1974).

Due to technical laboratory difficulties all the tests could not be done on all the patients.

Results

The results are given in Table I.

We did not find any change in the coagulation parameters of prothrombin time, partial thromboplastin time and thrombin time in seconds, platelet count, fibrinogen levels euglobulin clot lysis time in control and pre-eclampsia group.

TABLE I
Coagulation Studies in Normal and Pre-eclamptic Women

		Prothrombin time in seconds	Partial Thromboplastin time in seconds	Thrombin time in seconds	Platelet count/m	Fibrinogen mgm%	E.C.L.T. in minutes
	n	20	20	17	20	20	14
Pre-eclampsia group	AV	21.4	76.1	8.53	26.59 x 10 ⁴	404.3	173.2
	SD	3.28	31.7	4.03	11.72 x 10 ⁴	127.5	103.0
	n	20	16	20	20	20	19
Control group	AV	22.0	80.6	10.40	21.38 x 10 ⁴	409.0	163.7
	SD	4.38	20.3	3.69	2.91 x 10 ⁴	103.4	81.9
T-test		n.s.	n.s.	n.s.	n.s.	n.s.	n.s.

Discussion

An association between toxæmia and coagulation defects has long been recognised. McKay *et al* (1953) discovered that a widespread fibrin deposition was a prominent finding among patients who died of eclampsia. Page (1972) theorizes that many of the changes of pre-eclampsia are the consequences of fibrin deposited in vital organs as a product of slow disseminated intravascular coagulation initiated by thromboplastin entering the maternal circulation from the placenta while rapid disseminated intravascular coagulation and fibrin so formed cause cerebral vascular occlusion and convulsion of eclampsia.

Bonner *et al* (1951) found no significant difference in fibrinogen or plasminogen in toxæmic patients compared to normal pregnancy but fibrin degradation products were significantly increased in cases of pre-eclampsia and eclampsia. Birmingham group (1971) found that 10 out of 19 cases with pre-eclampsia showed either thrombocytopenia or hypofibrinogenemia or hypoplasminogenemia.

Pritchard and MacDonald (1976) and Kitzmiller *et al* (1974) studied coagulation changes in eclampsia to identify its role in pathogenesis. They conclude that the coagulation changes in eclampsia are effects rather than the cause. According to Pritchard and MacDonald (1976) the maternal fibrinogen levels did not differ remarkably from levels found late in normal pregnancy but the thrombin time was somewhat prolonged in one third of cases of eclampsia even when elevated levels of fibrinogen degradation products were not identified. However, in pathophysiology of toxæmia Pritchard and MacDonald (1976) agree that the various coagulation changes occur less frequently in women with pre-eclampsia.

This may be the reason why we fail to find any statistical difference in blood coagulation factors in normal pregnant and toxæmic group of women.

Summary

(i) Twenty cases of normal pregnancy and 20 cases of toxæmia of pregnancy, properly matched for age, parity and

gestational period were studied for prothrombin time, partial thromboplastin time, thrombin time, platelet count, plasma fibrinogen levels and euglobulin clot lysis time.

(ii) No statistical difference was found in the findings of all these parameters in both these groups.

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