COAGULATION STDUDIES IN WOMEN ON COMBINATION TYPE OF ORAL CONTRACEPTIVES

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Combination type of oral contraceptives have been implicated as causative agents of thromboembolic episodes. In the present study we have studied some parameters of coagulation in hospital class of women on oral contraceptives.

Twenty-five women before starting oral contraceptives, 16 on oral contraceptives for 1½ to 5 years and 35 on oral contraceptives for 5 or more than five years, were studied for prothrombin time, partial thromboplastin time, thrombin time, euglobulin clot lysis time, platelet count, platelet adhesiveness and platelet aggregation.

Statistically significant changes were found in partial thromboplastin time, platelet count, and platelet aggregation.

Introduction

Combination type of oral contraceptives have been implicated as causative agents of thromboembolic episodes. Reports about blood coagulation changes in women on oral contraceptives are conflicting. In the present study, we have studied some parameters of coagulation in hospital class of women on oral contraceptives.

Material and Methods

Women attending the oral contraceptive centre of Gynaecology Department, K.E.M. Hospital, Bombay, were selected for study. They were between 19 to 44 years of age and their parity was from 0 to 7. Twenty-five women whose basal readings were obtained before starting oral contraceptives served as the control group—Group A. Those women who were on oral contraceptives for more than 1½ years were selected and were divided into two groups.

(ii) Group B: Those on oral contraceptives for 1½ years or more but less than 5 years. There were 16 women in this group.

(ii) Group C: Those on oral contraceptives for 5 years, or more than 5 years. There were 35 women in this group.

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The tablets used were either Lyndiol (1 mg lynestrenol + 0.05 mg ethinyl oestradiol) or Primovlar—ED (0.5 mg norgestrel + 0.05 mg ethinyl oestradiol), depending upon availability. The following parameters of blood coagulation were studied by the methods given below.

(i) Prothrombin time—Quick (1935).

(ii) Partial thromboplastin time and Thrombin time Biggs (1972).

(iii) Serum fibrinogen — Goodwin (1961).

(iv) Euglobulin clot lysis time (E.C.L.T.)—Buckell (1958).

Platelet functions were studied as follows:

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

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

(iii) Platelet aggregation—Born (1962).

Results

Significant rise (P .05) was observed in prothrombin time in Group B, as compared to Group A (Control Group). There was significant rise (P .01) in partial thromboplastin time when Group B was compared with Group C and also when Group C was compared with Group A. There was no significant difference between Group B and Group A, as far as partial thromboplastin time was considered.

We also found significant rise (P .05) in platelet aggregation in grop C, as compared to Group A. There was a significant rise (P .01) in platelet count in women on oral contraceptives but these values were within the normal range for platelet count. No significant change was observed in platelet adhesiveness index, plasma fibrinogen and E. C. L. T.

Discussion

Jordan (1961) and Nevin *et al* (1965) from U.K. have reported a few cases of venous thrombosis with pulmonary embolism occurring in young women while receiving estrogen-progestin drugs. There have also been several reports of cerebral and coronary thrombosis in young women who were receiving these hormones (Lorentz, 1962, Naysmith, 1965). Oliver—concluded that there was an increased risk or that the association was anything more than coincidental between oral contraceptive drugs and thromboembolism. Analysis of mortality trends in 21 countries indicate that since oral contraceptives first became available changes in mortality from nonrheumatic cardivascular diseases and cerebrovascular diseases among women aged 15-44, years have been strongly associated with changes in the prevalence of oral contraceptive use in each country. This relationship is highly specific for women of reproductive age. The relative risks of death from heart disease and hypertension, cerebrovascular disease and all cardiovascular diseases for women using oral contraceptives compared with non-users were estimated to be 5 to 1, 2 to 1 and 3 to 1 respectively. The increased risks of cardiovascular disease might exist not only with the pills containing high oestrogen doses but also with the new 'lower dose' pills (Beral, 1976). In an attempt to resolve this controversy, several studies have been reported in which coagulation studies have been done.

There is a clinical impression that in Indian patients thromboembolic complications are uncommon, and we have monitored some parameters of coagulation. Whether coagulation tests can measure

'hypercoagulability' is itself a controversial issue according to Drill (1966) and he claims that clotting tests have contributed little to our knowledge of thrombosis. Hougie *et al* (1969) have reported changes in various clotting factors with estrogen-progestogen combinations. They agree that some changes take place in one or more of clotting factors although the magnitude of changes reported was not great. Frequently, these changes were within the wide range of the normal for each test. Robinson and Ham *et al*, did not find any change in clotting factors in women on oral contraceptives. Von Kaulla *et al* (1971) emphasise that of all the clotting changes induced by oral contraceptives loss of antithrombin III activity may be the one that is clinically most significant. Our results show that though some coagulation tests are significantly altered, they are within the normal range, except partial thromboplastin time in Group C.

Summary

(i) Twenty-five cases before starting oral contraceptives, sixteen cases on oral contraceptives for 1½ to 5 years, and thirty-five cases on oral contraceptives for 5 or more than 5 years, were studied for prothrombin time, partial thromboplastin time, thrombin time, euglobulin clot lysis time, platelet count, platelet adhesiveness and platelet aggregation.

(ii) Statistically significant changes were found in partial thromboplastin time, platelet count and platelet aggregation.

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