

Haemostatic studies in Sudanese women on oral contraceptive pills

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أجريت هذه الدراسة للكشف عن تأثير حبوب منع الحمل على تخثر الدم في ٥٠ امرأة مستخدمة لها ٢٥ يستخدم الحبوب ثنائية الهرمون بالمقارنة مع ٥٠ امرأة من اللاتي لا يستخدمن هذه الحبوب.

أشارت النتائج الى أن الحبوب ثنائية الهرمون سببت قصر ذو دلالة في زمن البروثروميين وزمن الثرومبوبلاستين الجزئي وإرتفاع ذو دلالة في مستوى الفبرينوجين وعدد الصفائح الدموية وهذا يشير الى وجود حالة التخثر المفرط. أستنتج من هذه النتائج أن الحبوب أحادية الهرمون هي الأسلم للاستخدام.

Abstract

Background:

The thrombophilic effect of contraceptive pills has widely been studied. This is the first study in Sudan addressing this issue. The study aimed at detection of haemostatic derangements in Sudanese women using contraceptive pills containing oestrogen and progesterone (combined pills) or progesterone only (mini pills) for short and long duration.

Materials and Methods:

Healthy Controls: 50 apparently healthy Sudanese women not on the pill.

Study group: 50 Sudanese women on the pill for periods of 1-30 months; 25 on combined pills, and 25 on mini pills.

Laboratory methods: platelet count, PT, PTT and fibrinogen level were done for all studied women using semi-automated methods.

Results: mean values for platelets, PT, PTT and fibrinogen were normal for both controls and study group but compared to controls mean PT and PTT were significantly shorter in users of combined pills while platelet counts and fibrinogen levels were significantly higher. Use of mini pills did not cause any deviation from normal. Duration of use did not affect results.

Conclusion: Combined pills pose a real risk of developing thromboembolic disease by causing a hypercoagulable state. As reported in the literature the use of mini pills is safer though less efficient in contraception.

Introduction

Oral contraceptive pills have undesired side effects such as gastric upsets, changes in body weight and allergic skin reactions have been reported⁽¹⁾. More seriously their use is known to be associated with a 3-6 fold greater risk of developing thromboembolic disease especially when associated with other risk factors like obesity and age^(2,3,4). This high risk is attributed to their high oestrogen content which causes a hypercoagulable state by leading to a rise in the level of coagulation factors such as I, VII, VIII, VwF, IX, X, XI and fibrinogen^(5,6).

Two types of pills are in use; combined pills containing both oestrogens and progesterone and mini pills containing only progesterone. The latter are less effective as contraceptive agents and are therefore given only to those who cannot tolerate the combined

pills or who are lactating⁽⁷⁾.

Hypercoagulability is indicated by significant shortening of PT and PTT as well as significant elevation of the platelet count and fibrinogen level. Several studies are published in the literature where hypercoagulability and enhanced platelet aggregation were reported in pill users⁽⁹⁻¹⁵⁾. The aim of this study was to look for evidence of hypercoagulability in Sudanese women taking contraceptive pills for either a short or a long duration.

Materials and methods

The control group consisted of 50 women of child bearing age who are not currently on contraceptive pills. The study group consisted of 50 women, age range 19-42, who are on contraceptive pills. Twenty five of them were taking combined pills and 25 were taking progesterone tablets (mini pills). Duration of usage varied between 1-30 months.

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Blood collection and processing

Venous blood was collected into citrated containers. Platelet poor plasma was then prepared by centrifugation at 2000 rpm for 15 min.

Laboratory testing: PT, PTT, and fibrinogen levels were performed on platelet poor plasma by a semi-automated technique using Diamed CD4 coagulometer

which uses a turbidimetric method that detects clot formation. Platelet counts were done manually using a Neubauer chamber and checked by peripheral blood film examination.

Statistical analysis: The SPSS programme version 13 was used for data analysis. Data was processed and formulated using Microsoft excel computer

programme using the statistical t-test in order to detect significant differences.

Results: Mean values for platelets, PT, PTT and fibrinogen were similar in controls and users of mini pills but were significantly different in users of combined pills. Platelets and fibrinogen levels were higher in the latter group while PT and PTT were shorter. In fact every single woman using combined pills had a significantly shorter PT and PTT when compared to controls ($p < 0.05$). Duration of usage did not affect the outcome. See Tables 1, 2, 3, &4 below.

Table (1): Results of PT (in seconds)				
Group	Mean	S ²	Calculated value	P-value
Control	13.8	2.06	-	
Mini pills users	13.4	2.3	1.1	> 0.05
Combined pills users	10.6	1.2	13.3	<0.05

Table (2): Result of PTT (in seconds)				
Group	Mean	S ²	Calculated value	P-value
Control	34.7	8.1	-	
Mini pills users	33.9	5.7	1.29	> 0.05
Combined pills users	30	27.4	4.2	< 0.05

Table (3): Results of Platelets count s(cells×10 ³ /μl)				
Group	Mean	S ²	Calculated value	P-value
Control	296000	5506	-	
Mini pills users	290000	5271.4	0.35	> 0.05
Combined pills users	419000	1840.67	9	<0.05

Table (4): Result of Fibrinogen level (in g/l)				
Group	Mean	S ²	Calculated value	P-value
Control	2.6	0.44	-	
Mini pills users	2.7	0.18	0.77	> 0.05
Combined pills users	4.3	0.48	10	< 0.05

Discussion

Oestrogen is a known risk factor in thromboembolic disease⁽³⁾. Combined contraceptive pills are therefore known to be associated with a higher risk of developing thrombosis. This is the first study in Sudan addressing this problem.

In this study platelet count, PT, PTT and fibrinogen levels were assessed in women using contraceptive pills of both types for short and long duration. Significant elevation of platelet counts and fibrinogen levels as well as significant shortening of PT and PTT were noted in users of combined pills as compared to

controls and users of progesterone pills (mini pills). This indicated presence of a hypercoagulable state. The results were not affected by duration of use since similar results were obtained in both short term and long term users. Such a state of hypercoagulability can lead to thromboembolic episodes which may endanger the lives of these women.

On the other hand mini-pills containing only progesterone seem to be quite safe to use. The only problem is that they are less effective as contraceptives and therefore less popular. These results are in agreement with studies done elsewhere⁽⁸⁻¹⁵⁾. We therefore recommend that for women with risk factors of developing thrombosis, combined pills should not be used as they would pose an additional risk factor. This study highlights a very serious problem which hitherto has not been taken care of in Sudan, and it is hoped that it will be an eye opener for those who are involved in prescribing contraceptive pills.

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