International Journal of Academic Health and Medical Research (IJAHMR(
ISSN: 2643-9824
Vol. 5 Issue 4, April - 2021, Pages: 1-5

Assessment of Hypercoagulability in Contraception among Sudanese's Women

Tarig A.M.Hamid[1*], WafaaA.Mohamed[2], Hawa A. hamed[3], Nema A. osman[4]

[1234]Department of Hematology and Immunohematology - Karary University- Khartoum Sudan.

Abstract: Back ground: *prevention of conceptions or impregnation by any of various drugs techniques, or devices, birth control effect on the thrombophilia.* ***Objectives****: To assess the contraception effect on the coagulation parameters, prothrombin time (PT), activated partial thromboplastin time (APTT), and D dimmer Levels.* ***Patients and methods:*** *A case control analytical study include 151 blood samples, 111 samples from women use contraception's and 40 apparently health individual as controls. PT, APPT is measured by COATRON M1assay respectively in case and control. And d. Dimer is measured by I croma.* ***Results:*** *A total of 151 individual were included in this study, 111 woman uptake contraception as case group and 40 not used contraception as control. The results showed that the mean of PT in woman used contraception was significantly increase when compare the case with control with P value = 0.01. The mean PTT in woman use contraception was significantly increase when compared to control group with P. value = 0.00. The mean D dimer in woman use contraception was significantly decrease in case group when compared to control group with P. value = 0.00.* ***Conclusion:*** *The present study showed that there wassignificant correlation between contraception and coagulation parameters (PT PTT and D. dimer with p. Value 0.01 & 0.00 and 0.00Respectively).*

Keywords: Contraception**,** Hypercoagulability– Sudan.

Introduction

Contraception is the act of preventing pregnancy This can be a device, a medication, a procedure or a behavior. contraception allows a woman control of her reproductive health and affords the woman the ability to be an active participant in her family planning

Contraceptive methods are technological advances intended to overcome biology.

Voluntarily informing the choice of contraceptive methods is an important guiding principle, and contraceptive counselling, when associable, is a marked contributor to the successful use of contraceptive methods Birth control methods are designed to prevent conception. Conception can be prevented by hormonally disrupting the menstrual cycle (Oral contraceptive (OC) pills), by physically blocking the passageway (barrier methods or sterilization), or less successfully, by abstinence during fertile periods or withdrawal method. Implantation is impaired via the use of a foreign body (intrauterine device {IUD}) or surgical removal (Salpingectomy or Vasectomy).

Medical devices used to prevent pregnancy include intrauterine devices or subdermal implants. The intrauterine device may or may not contain progesterone, and the subdermal implants all contain progesterone. The injectable currently on the market is a progesterone only, it does not have an estrogen component and many times results in irregular bleeding. Progesterone only forms alter cervical mucus and endometrial lining preventing conception. The injections are every 12 week and the failure rate is 6 women per 100 women per year. The medications commonly thought of for contraception include combined hormonal pills, patches, rings, and progesterone only pills. Combined oral contraceptive pills are monophasic, biphasic. They are dispensed monthly, quarterly . The common combined oral contraceptive pill mimics the menstrual cycle, 21-24 days of estrogen and progesterone to suppress ovulation Allen K.(2012).venous thromboembolism (VTE) and arterial thrombosis (AT) are the most concerning side effects of the OC pill. The rate of VTE in non-pregnant women is 4-5 per 10,000, in OC pill users is 9-10 in 10,000, while in a normal pregnancy it is approximately 30 in 10,000.Mørch ,(2017). Irregular bleeding is a common side effect and patients should be counselledaccordingly based on the form of medication or device they choose. Contraceptive-induced menstrual bleeding changes (CIMBCs) should be recognized as a critical concern in contraceptive counsellingand usage .Reid , (2010).

Materials and Methods:

Study design: This study was design as case control analytical study was conducted in Khartoum state theperiod From November2019 to February 2020 .

Samples collection: one hundred and fifty one samples have been collected, one hundred and eleven sample as a test and forty as control women selected by conventional random sampling because limited resources and there were no any statistical data available about the number of women with use of contraception included women age (18-48) effect in PT, PTT, and D dimer. All woman were Presence of other coagulation disorders, pregnancy, and unused of contraception will exclude. Requesting contraception were eligible to participate in this study and the information was arranged in an informative formula sheet which includes age, duration of contraceptive use, type, and dosage .

Sample processing: three ml of venous blood was collected by standard procedure tri-sodium citrate container from each participant in this study. Preparation of platelets poor plasma (ppp): Within 3 hours from blood collected, centrifuged capped citrate tube for 15 minutes at an RCF(relative centrifugal force) of 2000 . By usinga plastic transfer pipet, removed 3/4 of the top of plasma and placed it in a plain container. PT, APPT is measured by COATRON M1assay respectively in case and control. And d. Dimer is measured by I croma

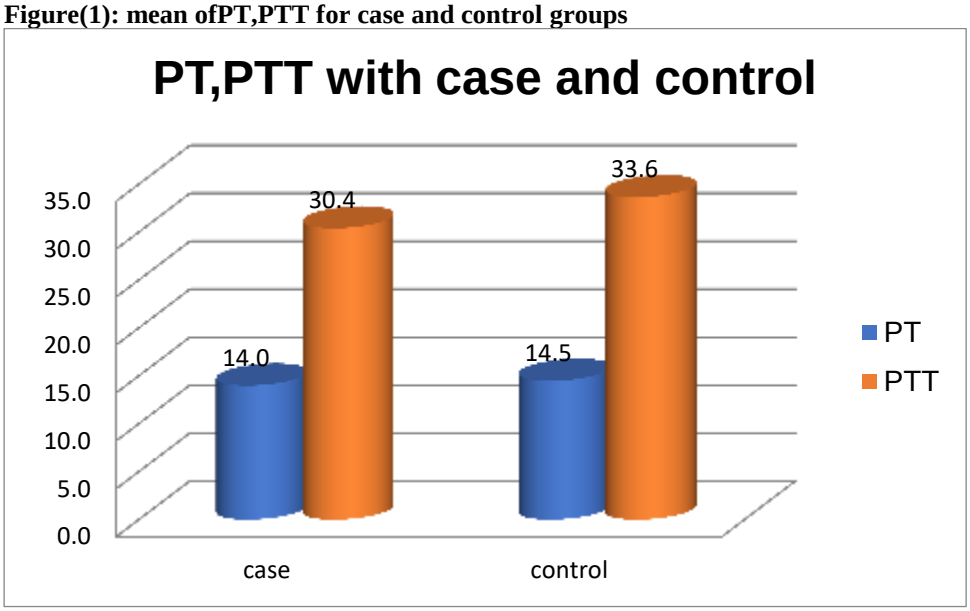
Barbara J etal, (2011).

Results:

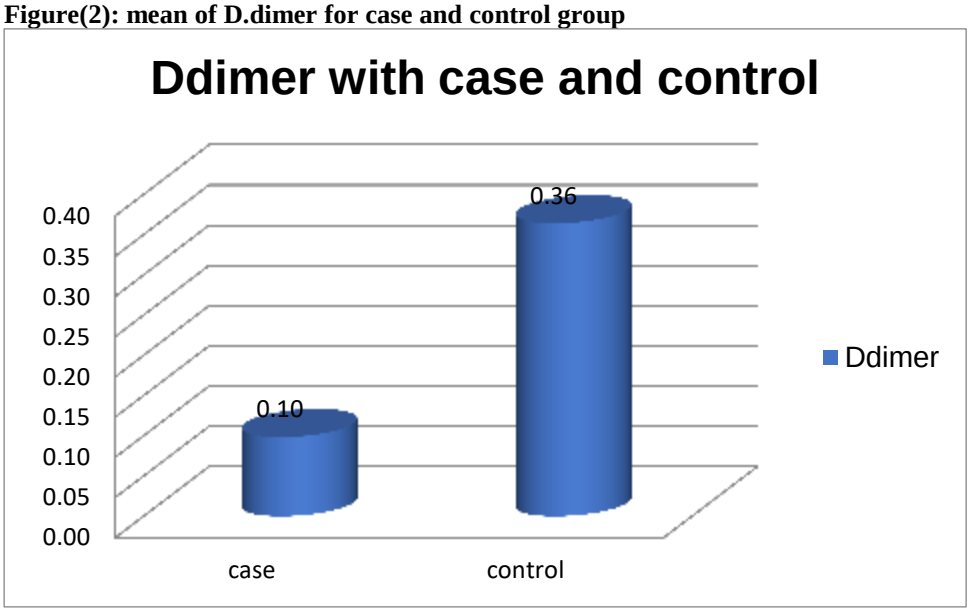
A total of 151 individuals were included in this study ,111 woman wereuptake contraceptionas case group and 40 werenot used contraceptionas controlgroup.

The mean ofPT in woman used contraception was statistical significant in case group(14.0s) when compared to control group (13.5 s) .with P value = 0.01. The meanof PTT in woman usedcontraception was significant in casegroup (30.4s) when compared to control group (30 s).with P. value = 0.00 .The meanof D dimer in woman used contraception was significant in case group(0.10) when compared to control group (0.36). with P . value = 0.00.

Figure(1): mean ofPT,PTT for case and control groups



Figure(2): mean of D.dimer for case and control group



The mean of PT in womanwere usedcontraception was insignificant increase with age [20-30 y] (13.98 s),30-40y (14 s)] With p. value = 0.8 .

The meanof PTT was insignificant different with age [20-30y](30.45s) ,[30-40y] (30.33s)] with p. value = 0.7 . The meanof d dimer was insignificant different with age [20-30y] (0.10) , [30-40y] (0.09) with p.value =0.3.

Table(1)The meanand P. value for PT ,PTT andD dimer correlated with age :

	age		p.value
	20-30 (n=68)	30-40 (n=42)	
PT	13.98	14.00	0.8
PTT	30.45	30.33	0.7
Ddimer	0.10	0.09	0.3

The mean PT in woman use oral contraceptive and implant was insignificant (13.95s and 13.92s , respectively). The mean PT in woman use IUD intrauterine device and injection was insignificant prolonged (14.19 s and 14.33 s ,respectively). With p. value = 0.5 .

The mean PTT in woman use oral contraceptive and implant was insignificant (30.15s and 30.62 s , respectively). The mean PTT in woman use IUD and injection was insignificant (31.94 s and 30.21s , respectively). with P. value = 0.1 .

The mean ofd. dimer in woman were usedoral contraceptive and implant was insignificant (0.10 and 0.09, respectively).The meanofd . dimer in woman were usedIUD and injection was insignificant (0.10 and 0.12 , respectively). With P .value = 0.6

Table(2):The mean and P. value for PT,PTT and d.dimer when correlated with mode:

	mode				p.value
	Oral (n=70)	Implant (n=24)	IUD (n=9)	Injection (n=7)	
PT	13.95	13.92	14.19	14.33	0.5
PTT	30.15	30.62	31.94	30.21	0.1
Ddimer	0.10	0.09	0.10	0.12	0.6

The mean ofPT in woman were usedcontraception was insignificant different with duration(< 1year, 14.01s) (1-5 years , 13.96s) (> 5 years , 14.07) with p. value =0.7 . The mean ofPTT in woman were usedcontraception was insignificant different with duration (< 1year, 30.46) (1-5 years , 30.33) (> 5 years ,31.00). With P. value = 0.6 . The meanofd .dimer in womanwere usedcontraception was insignificant different with duration (<1year , 0.10) (1-5 years , 0.10) (> 5 years ,0.07). with P. value = 0.4 .

Table(3) the mean and P. value for PT,PTT and D .dimer when correlated with duration

	duration			p.value
	< 1year (n=48)	1-5 years (n=59)	> 5 years (n=3)	
PT	14.01	13.96	14.07	0.7
PTT	30.46	30.33	31.00	0.6
Ddimer	0.10	0.10	0.07	0.4

Discussion

Defects in hemostasis may occur after the administrations of contraceptives in women; this is a case control study which was conducted in Khartoum state to evaluate the effects of contraceptive's on the some homeostasis tests ,One hundred fifty one blood samples were collected, 111as test used contraceptives and 40as control women selected by conventional random sampling .

The present study showed that the mean of PT in woman were used contraceptive was significant increase when comparewith the case (14.0) with control (13.5) with P value = (0.01).

These results wereagreewith study wasdone in Khartoum state by **Mohieldin *etal* in 2011**the mean of PT (14.0 seconds) and control (13.4 seconds) with p. value (P value = 0.08). and disagree with study was done in **shendi by Eman(2018)**and thestudy wasdone in Iraq done(delete it) by **Ahmed *etal*in 2007** and alsowith study was donein Iraq by **SuhayrE .*etal*(2008)** respectively .

The mean of PT result in study group was (14.3 seconds, 12±1 seconds, and14±3.80 respectively) and when compared with control(13.2 seconds, 11-13 seconds and13.5±1.19 respectively), these results were insignificance P. value (0.05) , P (0.05) and P (0.05) respectively. The mean of PT in the study group ofage group of [20-30 y] (13.98) and when compared with age group of [30-40y] (14 s) The result was statistical insignificance With (P. value = 0.8). This agree with study was done in shendi by **Eman *etal* (2018)** the mean PT result in study group when compared with age more than or equal to30 years (14.seconds) (P value =0.35) and disagree with study wasdone in Khartoum state by **Mohieldin *ctal* in 2011** The mean PT in study group of age less than 30 years (14.1 seconds + SD).

The result of PT in woman use oral contraceptive was insignificant (13.95s) this agreed with study wasdone in Khartoum state by **Mohieldin *ctal* in 2011** The mean of PT in study group who used combined pills was (14.0 seconds ± SD)similar to that of who used progestin only pills (14.0 seconds) (P. value 0.59). In the present study also there are insignificant changes were noticed between types and duration of oral contraceptives. And these agree with study in Khartoum state by **Mohieldin *etal* in 2011**.

In our study the mean of PTT in woman were usedcontraceptive was statistically significant in case (30.4s) group when compared to control group (30s)with (P. value = 0.00). this disagree with study was done in shendi by **Eman(2018)**. And in agrrement with studies were done by **Mohieldin in (2011),Nasir *etal (*2003)** in Khartoum , Pakistan with mean results (32.1 seconds 33.4 seconds with p. value (P value = 0.003 , 0.002 respectively).

In the present study the mean of PTT was insignificant with different age [20-30y](30.45s) ,[30-40y] (30.33s) with (p. value = 0.7) disagreed with study done in Khartoum state by **Mohieldin *ctal* in 2011 ,** and study done in shendi by **Eman (2018)**. The mean ofAPTT result in study group of age less than 30 years (33.7 seconds + SD 33.5 seconds) and of age more than 30 years (33.2 seconds + SD 36.2 seconds) (P value = 0.52 and P <0.05 respectively). The mean of PTT was insignificant with the duration (< 1year, 30.46) , (1-5 years , 30.33) these in agreement with study was done in shendi by **Eman (2018)** with mean of APTT in contraceptive duration of 5months- 2years (30.5 seconds).

The mean result of D.dimer was increased when compare withcase group(0.36) with control group (0.10) with statistically significant (p. value=0.00). That disagrees with previous study done by **Ahmed J. *etal (*2008)** in Iraq with significant positive in users than non users (P<0.001)

Conclusion

The present study showed that there were statistical significant correlation between contraception and coagulation parameters (PT PTT and D. dimer with p. Value 0.01 & 0.00 and 0.00 respectively). And insignificant changes were noticed between age, type, and duration of contraception.

Acknowledgements

We would like to thank the staff of Hematology Department at karary University for facilities and support and we are grateful to the staff of military hospital Laboratory for their collaboration. Finally special thanks to the patients for being cooperative.

References

Ahmed J. AL-Husaynee, Muna A. Kashmoola.(2007). Effect of combined oral contraceptive pills on some haemostatic parameters, Annals of the College of Medicine**,** Vol. 33 No 1&2**.**

Allen K. Contraception - common issues and practical suggestions.AustFam Physician. 2012 Oct;41(10):770-2.

Barbara J. Bain; Imelda Bates, Mike Laffan, John V. Dacie, and S. Mitchell Lewis.(2011).
Dacie and Lewis Practical Haematology . 11th ed**.** China. P (409-4011 **).**

Eman Mohammed Khalifa.(2018). Determination of Oral Contraceptive pills Effect on Coagulation Profile among Sudanese women in Shendilocality ,
BSc in Medical Laboratory Sciences, Faculty of Medical Laboratory Sciences, Shendi University (2006).

Mohieldin Elsayid, Mudathir Abdelrahim Mohammed Elbasheer, Mahmoud Mohamed Elgari, Tayseer Elamin Mohamed Elfaki. (2011). The Effect of Contraceptive Pills on Coagulation Tests among Sudanese Women in Khartoum State- Sudan International Journal of Science and Research (IJSR),Volume 5 Issue 10,www.ijsr.net.

NasirAli Afsar, QamaruddinBarakzai, Salman NaseemAdil .(2003).Effect of Low Dose Oral Pill on Haemostatic Parameters in a Set of Pakistani Population ,Original Article, Vol. 58, No. 5 .

MørchLS,Skovlund CW, Hannaford PC, Iversen L, Fielding S, Lidegaard Ø. Contemporary Hormonal Contraception and the Risk of Breast Cancer. N. Engl. J. Med. 2017 Dec 07;377(23):2228-2239.

Reid R, Leyland N, Wolfman W, Allaire C, Awadalla A, Best C, Dunn S, Lemyre M, Marcoux V, Menard C, Potestio F, Rittenberg D, Singh S, Senikas V., Society of Obstetricians and Gynaecologists of Canada. SOGC clinical practice guidelines: Oral

contraceptives and the risk of venous thromboembolism: an update: no. 252, December 2010. Int J Gynaecol Obstet. 2011 Mar;112(3):252-6.

SuhayrE.Alqaysi ,ZainabM.JasemZeanaA.AliHibbaR.Behayaa ,SabaA.Almunaeem ,ShaimaeA.Alzahrra. (2008). Effect of low dose combined oral contraceptives on prothrombin time, Medical Journal of Babylon - Volume 5 No 2.