

Assessment of Platelet, Prothrombin Time (PT) And Partial Thromboplastin Time (PTT) In Patients With Polycystic Ovary Disease, Khartoum, State, Sudan, 2017

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Abstract: Polycystic ovary syndrome (PCOS) is a common heterogeneous endocrine disorder characterized by irregular menses, hyperandrogenism, and polycystic ovaries. PCOS is recognized as one of the most common endocrine/metabolic disorders in women. Its prevalence depends in part upon the diagnostic criteria used to define the disorder (1). This study was carried out to measure Prothrombin Time, Activated Partial Thromboplastin Time, Platelets count in Polycystic ovary syndrome (PCOS) in Sudanese patients. Fifty blood samples were collected from patients in period between June to October 2016, chosen from ----- hospital and thirty women as control. The samples were analyzed for (PT) and (APTT) by the by semi-automated coagulometer (bio bas) and platelets by using Sysmex Kx-21N. The study showed that, women with polycystic syndrome had no significantly different in mean PT, APTT and platelets (13.57 ±1.33) vs. (13.46±1.30) , (27.47±5.48) vs (27.99±5.36), and (223.68±72.08) vs (226.63(±75.36) p value >0.05 respectively.

Materials And Methods: Study Population: The study was carried out at College of Medical laboratory sciences, and the subjects were recruited from ----- hospital, in Khartoum (Sudan) from June to October 2016. A total of 120 women were enrolled in this study; divided into two groups, 60 healthy women (Control group), and 60 women with polycystic syndrome (case group). The study was approved by hospital's ethics committee. Informed consent was obtained from patients before blood sampling. Inclusion criteria:- Women with polycystic syndrome and normal healthy women serve as control group were included in this study. Exclusion criteria **Blood sample and Analysis:-** About 2ml of venous blood was collected from the antecubital vein by taking aseptic precautions. Care was taken to prevent venous stasis during the sample collection. The estimation of the parameters was carried out within 4-6 hrs. The samples were analyzed for (PT) and (APTT) by the by semi-automated coagulometer (bio bas) and platelets by using Sysmex Kx-21N. Data was analyzed using SPSS computer program, the mean and standard deviation were obtained and the independent 't.test' used for comparison (p value of ≤ 0.05) was considered significant.

Results: In this study the mean ± SD of age PT, PTT and Platelets in case group were 13.57(+ 1.33) 27.47(+ 5.48) second 223.68(+ 72.08) x10⁹/μL respectively. The difference was statistically significant (P=0.00)

Conclusion: This study concluded that PT and APTT and platelets were normal in Polycystic ovary syndrome (PCOS) compared to the normal subjects

Keywords: Sudanese, female, (PCOS), PT, APTT, Platelets.

I. Introduction

Polycystic ovary syndrome (PCOS) is a common heterogeneous endocrine disorder characterized by irregular menses, hyperandrogenism, and polycystic ovaries. PCOS is recognized as one of the most common endocrine/metabolic disorders in women. Its prevalence depends in part upon the diagnostic criteria used to define the disorder. Symptoms of PCOS: The major clinical features are hirsutism, menstrual irregularities, obesity, insulin resistance, hyperinsulinemia, polycystic ovaries (PCO). Other characteristics include male pattern balding, acanthosis nigricans, sleep apnea with increased risk for hypertension, cardiovascular disease, diabetes mellitus, endometrial carcinoma, and overproduction of ovarian androgens and luteinizing hormone. Infertility is, of course, the main clinical implication of ovulatory dysfunction in PCOS. However, ovulatory dysfunction in association with other characteristics of PCOS, such as obesity, is also associated with increased prevalence of endometrial hyperplasia and endometrial cancer

Diagnosis

Diagnosed criteria for PCOS include Clinical characterization also changes throughout the lifespan, especially during the post-menarche years and in the menopause transition. A metabolic syndrome of obesity-related and/or intrinsic insulin resistance occurs in about half of PCOS patients, and the compensatory

hyperinsulinism has tissue-selective effects, which include aggravation of hyperandrogenism. PCOS seems to arise as a complex trait that results from the interaction of diverse genetic and environmental factors.

Risk Factors for PCOS

Environmental factors include prenatal androgen exposure and poor fetal growth, whereas acquired obesity is a major postnatal factor. The variety of pathways involved and lack of a common thread attests to the multifactorial nature and heterogeneity of the syndrome. Further research into the fundamental basis of the disorder will be necessary to optimally correct androgen levels, ovulation, and metabolic homeostasis. An increased prevalence of PCOS is associated with a number of conditions. A history of weight gain often precedes the development of the clinical features of PCOS, and following a healthy lifestyle has been shown to reduce body weight, abdominal fat, reduce testosterone, improve insulin resistance, and decrease hirsutism in women with PCOS. A number of factors that are associated with an increased risk of PCOS have been identified in children. Prenatal factors include high birth weight in girls born to overweight mothers, congenital virilization, and low birth weight. Risk factors apparent later in childhood include premature pubarche, atypical central precocious puberty, obesity syndromes, acanthosis nigricans, and metabolic syndrome. Cardiovascular risk markers and early subclinical atherosclerosis cluster in women with the polycystic ovary syndrome (PCOS) as a consequence of their hyperandrogenism and insulin-resistant metabolic milieu. The latter might lead to a prothrombotic state and to endothelial dysfunction, especially if amplified by the obesity frequently associated with PCOS.

Treatment

Treatment for women with PCOS depends on the symptoms with which a patient presents. Symptoms typically fit into three categories: menstruation related disorders; androgen-related symptoms; and infertility. The therapeutic management of the syndrome should consider the heterogeneity in PCOS phenotypes. The choice of treatment should be defined according to age and the specific phenotype of the individual patient. Among others, selected classes of patients who may require specific attention in defining the therapeutic plan are i) adolescent girls, ii) normal weight hirsute women with PCOS, iii) obese hirsute women with PCOS, iv) hirsute women with PCOS seeking pregnancy, v) hirsute women with PCOS and menopause and vi) hirsute women with PCOS and glucose intolerance states.

II. Materials And Methods

This study is a case control study, conducted in Khartoum, Sudan, in the period from March to April 2017. Eighty samples were included in this study to assess the Prothrombin Time, Activated Partial Thromboplastic Time and Platelets count in PCOS Sudanese patients. Eighty samples were collected from patients (case group) and 30 samples were collected from healthy persons which represent control group. Five ml of blood were collected from each subject by clean venous puncture, 3ml of which was placed in an EDTA container for assessment of platelet count and other two ml was placed in Sodium citrate anticoagulant for measurement of PT and PTT. This study was approved by ethical committee of ministry of health, and informed consent was obtained from each participant before sample collection. Data was collected by a structured questionnaire system from patients in obstetrics & gynecology clinic. Patients' data were analyzed by SPSS computer program version 21.

PT and PTT

Assessment PT was measured by delivering 0.1 ml of patient platelet poor plasma into containing stir in semi-automated coagulometer (Bia Bas) diagnostic stage, 0.2 ml was added of classified thromboplastin by automatic pipette, then pressing start at that moment. The machine recorded the measurement time at the moment which the clot was formed. APTT was measured by delivering 0.1 ml of patient platelet poor plasma into containing stir in semi-automated coagulometer (Bia Bas) diagnostic stage, 0.1 ml of the Kaolin-phospholipids solution was added by automatic pipette and start the stopwatch simultaneously after 3 minutes added 0.1 ml of CaCl₂ then pressing start at that moment. The machine recorded the measurement time at the moment which the clot was formed.

Platelets count Assessment:

Was measured using Sysmex Kx-21N

III. Results

The results of this study showed that in total of 80 samples included in this study, collected from female. The results showed: -The mean \pm SD and P-value of PT, PTT and Platelets in case group were 13.57 (\pm 1.33) 27.47 (\pm 5.48) second 223.68 (\pm 72.08) $\times 10^9/\mu\text{L}$ and p value .279, .116, .849 compare with control group the

correlation between and PT, PTT and platelets in case group -.204 insignificant weak negative correlation(PT),-.293insignificant weak correlation.(PTT),0.36weak positive (platelets) Table (3): A total of 80 participants were included in this study, 50 as case group and 30 as control group . Table (1):

Shows the means of PT, PTT and platelets counts and p. value among case and control groups.

	Case (± SD)	Control (± SD)	P. Value
PT	13.57 (±1.33)	13.46(±1.30)	0279
PTT	27.47(±5.48)	27.99(±5.36)	.116
Platelets	223.68(±72.08)	226.63(±75.36)	0849

Shows the association between Treatment and PT, PTT and platelets in case group.

	Under treatment(±SD)	No treatment(±SD)	New cases(±SD)	P. value
PT (Sec.)	13.29(1.34)	13.54(1.42)	13.85(0.61)	0.605
PTT (Sec.)	28.34(4.5235)	25.94(4.95)	33.83(5.83)	.004
Platelets (x 10 ⁹ /µL)	217.65 (53.85)	226.48 (91.22)	259.33 (89.15)	0.492

Frequency of abnormal PT, PTT ,platelets count in case group

parameter	frequency
PT	ZERO
PTT	ZERO
Platelets	1

IV. Discussion

Polycystic ovary syndrome (PCOS) is a common heterogeneous endocrine disorder characterized by irregular menses, hyperandrogenism, and polycystic ovaries. Our results showed that normal PT, PTT and Platelets among Sudanese female patients with PCOS compared to normal control groups .p value(.279,.116,.849)respectively Results in this study showed that, insignificant abnormal in coagulation parameters in Patients under treatment. Also the results showed that, insignificant abnormal in coagulation parameters in new cases. This result in agreement with result carried by (Abdalla et al) reported that fifty blood samples were collected from patients diagnosed as PCOS cases. coagulometer, and platelets were counted using Sysmex™ Kx21n. The mean prothrombin time of the patients' group was 14.9± 3 sec. while it was 12.6± 1.4 sec in the control group and the mean activated partial thromboplastin time was 40.5±10.7 sec and 34± 1.9 sec in the patients and control groups respectively. The mean platelets count was 244.9± 124.4x10⁹/l in patients' group and 257.7± 55.7x10⁹ And result disagreed with another result done by (manuel et al) which showed significant decreased in PT and increase in PTT inpatient under treatment

V. Conclusion

This study concluded that PT and APTT were normal in patients with PCOS and normal platelets count.

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