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Association between IgM/IgG Anti-Phospholipids and Miscarriage among Aborted Women in Khartoum State, 2021

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Abstract	Original Research Article

Background: Antiphospholipid antibodies (APL) are a heterogeneous group of autoantibodies that are detected in the serum of patients with a variety of conditions, including auto immune diseases, infections, lymphoproliferative disorders, thrombosis, thrombocytopenia and recurrent fetal loss or recurrent miscarriage. *Aim:* To determined association between IgM/IgG antiphospholipid and miscarriage among aborted women in Khartoum state. *Method:* A 90 blood samples were collected from 45 aborted women with history of abortion and they sated as case group and 45 healthy women as control. The blood samples were tested for IgM/IgG anti-phospholipid using ELISA technique. *Results:* The median of IgM anti-Phospholipids was increase significantly (*P 0.000*) among aborted women (median 26.8) than healthy control (median 7.4), and 80% of aborted women showed positive result and the median of IgG anti-Phospholipids was insignificantly (*P 0.923*) among aborted women (median 5.9) and healthy control (median 6.2), and 22.2% of aborted women showed positive result. IgM/IgG Anti-phospholipids shows insignificant increase with repeated abortion and age. *Conclusion:* There was a significant association between IgM antiphospholipid and miscarriage and insignificant of IgG APL.The concentration of IgM/IgG antiphospholipid is insignifiantly increased with age and recurrence of abortion.
Keywords: Antiphospholipid, Abortion, miscarriage, IgM/IgG.

INTRODUCTION

Antiphospholipid antibodies (APL) are a heterogeneous family of autoantibodies directed against phospholipids and/or phospholipid binding proteins, mainly, LA, anti-ß2GP1, and aCL. Besides APS, these auto-antibodies are seen in other circumstances, such as infections, medications, and malignancy LA appears to be the strongest predictor of thrombotic risk for both venous and arterial thrombosis with a 5- to 16-fold increase in the odds ratio of thrombosis than the control, followed by anti-b2GPI, correlating mainly with arterial rather than venous thrombosis. Conversely, the aCLs are thought to carry the weakest risk of thrombosis, which correlate mainly with venous thrombosis in a prospective Italian study, hypertension and the presence of lupus anticoagulant were identified as independent risk factors for the development of thrombosis in asymptomatic Individuals with APL. Selected screening for aPL in the setting of venous and/or arterial thrombosis may help to identify those patients who are more likely to have APS [1]. In people with APS, the immune system produces harmful antibodies called antiphospholipid antibodies (aPL). These aPL affect cells in the blood and in the walls of blood vessels in such a way that the blood becomes 'sticky' and more likely to clot inside the vessels. Clotting inside vessels is called thrombosis. In a pregnant woman APL can also affect the womb and the placenta in a way that can make the baby grow more slowly and increase the risk of miscarriage. There are a number of other factors that make it more likely for you to develop blood clots, including: smoking, immobility (related, for instance, to thethrombosis seen after long-haul flights), the contraceptive pill and genetic factors [2].

MATERIAL AND METHOD

Study Design
Case control study.

Study Area
This Study carried out in Omdurman Maternity Hospital.

Study Population

This study confined on miscarriage women and non-miscarriage women in Omdurman maternity hospital.

Sample Size and Sampling Technique

Sample size was 90 (n 90) 45 miscarriage women (case) and 45 women no history of miscarriage (control).

Data Collection

Personal data collected by structured questionnaire which include age trimester of pregnancy and history of abortion.

Collection of Specimen
Blood:

5ml of venous blood collected in plain container. Serum extracted from the blood samples by centrifugation and the samples thus obtained used for serological test of antiphospholipid IgM and IgG.

Method:

Phospholipids Screen IgM & IgG ELISA:

Enzyme immunoassay for quantitative determination of IgG and IgM auto antibodies against Cardiolipin Phosphatidyl serine Phosphatidyl inositol Phosphatidic acid and Beta_2_Glycoprotien I in human serum or plasma.

RESULT

In table (1) show the median and Statistics of IgM anti-Phospholipids in Patients group were (26.8) and control group was (7.4). That significant result in patients group and control group (P value=0.000). There were insignificant of IgG antiphospholid in patiens samples and control samples, IgG of patient samples was (5.9) and IgG in control samples was (6.2) . We showed slightly increase in control results (6.2) compare with patient results (5.9), but this result was insignificant *(P value 0.923)*. In table (2) 90 samples were collected ,45 patient samples, the result show 36 (80.0%) were positive, when 9(20.0%) were negative shown and 45 of control samples, were 12(26.7%) positive and 33(73.3) negative. Total of IgM positive = 48(53.3%) and total of IgM negative = 42(46.7%). Significant result (P value 0.000) In IgG antiphospholipid the result show 10 (22.2%) were positive , when 35(77.8%) were negative shown and 45 of control samples, were 11(24.4%) positive and 34(75.6) negative.Total of IgG positive = 21(23.3%) and total of IgG negative = 69(76.7%). This insignificant result *P value 0.803)*. IgM Anti-phospholipids shows insignificant increase with repeated abortion *(P 0.730)* and age *(P 0.545)* in table (3) and (4)*. IgG Anti-phospholipids shows insignificant increase with repeated abortion *(P 0.660)* and age *(P 0.326)* in table (3) and (5).

Table 1

Anti-phospholipids	Patients (n=45)	Control (n=45)	P value
IgM GPL-U/ml	26.8	7.4	0.000
IgG GPL-U/ml	5.9	6.2	0.923

Table 2

Study groups	IgM		IgG		Total
	Positive	Positive	Negative	Negative	
Patients	36(80.0%)	10(22.2%)	35(77.8%)	9(20.0%)	45(100.0%)

Table 3

History of Abortion	IgM		IgG	
	Positive	Positive	Negative	Negative
Once	31(81.6%)	8(21.1%)	30(78.9%)	7(18.4%)
More than one time	5(71.4%)	2(28.6%)	5(71.4%)	2(28.6%)
Total	**36(80.0%)**	**10(22.2%)**	**35(77.8%)**	**9(20.0%)**

Table 4

Patients group		IgM	
		Positive	Negative
Age groups	18-28	19(86.4%)	3(13.6%)
	29-39	14(73.7%)	5(26.3%)
	40-50	3(75.0%)	1(25.0%)
Total		**36(80.0%)**	**9(20.0%)**

Table 5

Patients group		IgG	
		Positive	**Negative**
Age groups	18-28	5(22.7%)	17(77.3%)
	29-39	3(15.8%)	16(84.2%)
	40-50	2(50.0%)	2(50.0%)
Total		**10(22.2%)**	**35(77.8%)**

DISCUSSION

90 samples were collected ,45 patient samples, the result show 36 (80.0%) were positive, when 9(20.0%) were negative shown and 45 of control samples, were 12(26.7%) positive and 33(73.3) negative. Total of IgM positive = 48(53.3%) and total of IgM negative = 42(46.7%). The study support us " Anti-phospholipid antibodies have been demonstrated to be the strongest risk factors for foetal loss, the prevalence of which is as high as 40% in women with recurrent fetal loss [3]".45 patient samples collected from aborted women, the result show36 /45 (80.0%) were positive. Our study agrees with this study" Positive results in tests for antiphospholipid antibodies (APA) are associated with adverse pregnancy outcome, especially recurrent pregnancy loss and intrauterine growth retardation, as well as with maternal complications including thrombosis, thrombocytopenia and pregnancy induced hypertension."[4]. The result of IgM antiphospholipid shown the history of abortion once time were 31(81.6%) positive and 7 (18. 4%) were negative .More than one time was 5 (71.4%) positive and 2(28.6%) was negative Total the positive of history of abortion in patients group once time was 36(80.0%) and 9 (20.0%) was negative insignificant result. In this point this study disagree us" Antipospholipid antibodies based on number of abortions and gestational age of abortions were increased [4].

IgG antiphospholipid of the history of abortion in patients group more than one (7.4) and patients have been abortion once (5.7)." Antipospholipid antibodies based on number of abortions and gestational age of abortions were increased [3]." This study agrees with our study .The concentration of IgM/IgG antiphospholipid is insignifiantly increased with age and recurrence of abortion. This agree us in" Most studies concerning the risk factors for spontaneous abortion have concluded that the predominant negative effects are those of advanced maternal age (with a clear increase in risk after 35 years) and previous spontaneous abortion "[5].

CONCLUSION

There was a significant association between IgM antiphospholipid and miscarriage and insignificant of IgG APL.The concentration of IgM/IgG antiphospholipid is insignifiantly increased with age and recurrence of abortion.

RECOMMENDATIONS

Determine antiphospholipid IgA in aborted women. Analysis antiphospholipid IgM by other techniques. Exclude patient have autoimmune diseases. Increase sample size more than 90.

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