

Serum Anticardiolipin Antibodies in Recurrent Abortion

A KHAN M TAYYIB T TASNEEM M FAROOQ F UREHMAN I D UJJAN.

Department of Pathology, Postgraduate Medical Institute, Lahore.

Correspondence to Dr. Ashraf Khan, Peshawar

The present study was carried out to detect the serum anticardiolipin antibodies (ACA) in recurrent abortion. Fifty women with history of recurrent abortions (Group A) were selected with twenty normal women of childbearing age as controls (Group B). Routine haematological investigations like haemoglobin, TLC & Platelets were done by haematology autoanalyzer. PT, APTT and serum anti-cardiolipin antibodies (IgG & IgM) were done by commercially available kits. Serum anticardiolipin antibodies were raised in patients with recurrent abortion when comparing with controls. PT was prolonged in one patient and APTT was prolonged in four cases.

Key words:- Anti-cardiolipin antibodies, recurrent abortion.

Recurrent fetal loss is the third most frequent feature of antiphospholipid syndrome. Asherson (1988)¹ first gave the concept of primary antiphospholipid syndrome. Several studies have documented the major clinical and serological characteristics of this syndrome^{2,3}. In a study by Creagh et al (1991)⁴ it was found that in some otherwise healthy pregnant women, LA and anticardiolipin antibodies may be present. Abortion is defined as the termination of pregnancy before 28th week of gestation that is before the fetus is viable. In 1977 the world health organization (WHO)⁵ defined abortion as the expulsion or extraction from its mother of a fetus or an embryo weighing 500g or less. A birth weight of 500g usually means 22 weeks of gestation and these are the criteria now being strongly recommended for international acceptance⁴. 80% of the diagnosed abortions occur in the second and third month of pregnancy⁶. Before the 12th week the pregnancy sac tends to be extruded from the uterus in one mass. After 12 weeks the process more often resembles labour. The membranes rupture at some stage during dilatation of the cervix and the fetus and placenta are then born separately.

The over all conception loss rate is thought to be 50%⁷. At least, 15% of fertilized ova are lost before implantation and the early loss rate among clinically recognized pregnancies is also up to 12 to 15%⁸. If a woman has had one or two miscarriages the likelihood of a successful subsequent pregnancy is still about 80%. The causes of abortion may be fetal or maternal. Those related to the fetus include malformations, fetal anoxia, anemia (hemolytic anemia), poisons, drugs, infections, hyperpyrexia, direct injury etc. Maternal factors include failure of uterus to accommodate the pregnancy sac due to inadequate preparation of the uterus by hormones, developmental errors of uterus, displacements and distortion of the uterine cavity by fibroids, stimulation of the expulsive uterine contraction and cervical incompetence⁹. Lynch et al (1994)¹⁰ studied women with recurrent fetal loss. They found that patients with adverse pregnancy outcome had higher percentage of antiphospholipid-antibodies and the same group had higher prevalence of antinuclear antibodies. Elder et al (1988)¹¹ found that IgG anticardiolipin antibody carries worse

prognosis as compared to IgM anticardiolipin in patients with history of abortions.

Subjects and methods:

A total of fifty women with history of recurrent abortions (consecutive three abortions) were selected for this study. Twenty healthy normal women of childbearing age were also included as controls. Five ml blood was withdrawn aseptically from antecubital vein in plastic disposable syringe and Hb, TLC, platelets were done by hematology autoanalyzer. PT, APTT and serum ACA were done by commercially available kits. Results were analyzed by student's 't' test and level of significance was done.

Results:

Results are given in Table 1, 2 & 3.

Table 1: Comparison of Hb, TLC, Platelets, PT and APTT in Group A & B subjects

Tests	Group A (Patients with recurrent abortion)	Group B (Control)	A Vs B
Hb	11.7 ± 1.5	11.9 ± 0.8	NS
TLC	8.65 ± 2.33	8.21 ± 0.99	NS
Platelets	246.3 ± 123.0	234.8 ± 62.3	NS
PT	12.8 ± 0.9	12.6 ± 0.5	NS
APTT	34.5 ± 4.2	33.2 ± 1.1	NS

Table 2. Comparison of ACA (IgG & IgM) in Group A & B subjects

Tests	Group A (Patients with recurrent abortion)	Group B (Control)	A Vs B
ACA (IgG)	11.9 ± 16.5	5.5 ± 2.26	HS
ACA (IgM)	5.72 ± 2.55	5.5 ± 2.26	NS

Table 3. Anti cardiolipin antibodies (IgG & IgM) in patients of recurrent abortion

ACA	Positive Cases	Negative Cases
IgG	08 (16%)	42 (84%)
IgM	02 (4%)	48 (96%)

Discussion:

The haematological profile of all patients with recurrent abortion and controls did not reveal any statistically significant difference. The only finding was thrombocytopenia which was found in 3(6%) patients with recurrent abortions. Sammitano et al (1990)¹² reported thrombocytopenia in 15-20% patients. Creagh et al (1991)⁴ in their study showed thrombocytopenia in one patient out of 35 patients (2.9%).

Prothrombin Time(PT)

In the present study, none of the ACA positive patient's revealed prolongation of PT. Out of 50 patients with recurrent abortion only one (2%) patient had a slightly raised PT. The results of PT are in agreement with Saxena et al (1991)¹³. Creagh et al (1991)⁴ found prolongation of PT in 2(5.7%) out of 35 patients.

Activated Partial Thromboplastin Time

In this study, out of 50 patients, 4 (8%) patients with recurrent abortion had prolonged APTT. Among the 8 patients which are positive for ACA, 2(25%) revealed prolongation in APTT. The APTT ranged from 30.2sec to 53.2 sec. A difference of 10 seconds was considered abnormal. Two patients who had a prolonged APTT were negative for ACA. This shows that ACA is more sensitive marker in patients with recurrent abortion because patients with normal APTT showed positive ACA. A study by Lazarchick & Kizer (1989)¹⁴ confirms our results as 07 (33%) out of 21 patients had prolonged APTT. The mechanism by which antiphospholipid antibodies prolong APTT appears to be through the binding of phospholipid within the thromboplastin, preventing the assembly of the prothrombin prothrombinase complex, which is necessary for efficient activation of the coagulation cascade i.e. final pathway¹⁵.

Anticardiolipin Antibodies

In this study, out of 50 women with recurrent abortion 8(16%) were positive for anticardiolipin antibodies. All the 8(16%) had elevated titres of IgG ACA. Only Two (4%) patient had elevated IgM anticardiolipin antibodies. All the control subjects were negative for both IgG and IgM anticardiolipin antibodies. Our study correlates with the studies of Creagh et al (1991)⁴, Taylor et al (1990)¹⁶, Matzner et al (1994)¹⁷ and Yetman and Kutteh (1996)¹⁸ who observed 17.1%, 15%, 16.4% and 17.3% positive ACA in their studies respectively. The available data supports the hypothesis that the reduction of Annexin-V on the surfaces of placental trophoblasts and vascular endothelial cells, which come in contact with flowing blood, may provide a thrombogenic mechanism for this disorder. Anionic phospholipids when exposed on the apical surface of the cell membrane bilayer, serve as potent cofactor for the assembly of 3 different coagulation complexes: the tissue co-factor (TF)-VIIa complex, IXa-VIIIa complex and the Xa-Va complex and thereby accelerate blood coagulation. The TF complex yields factors IXa or Xa, the IX a complex yields factor Xa, and the Xa formed from both of these

reactions is the active enzyme in the prothrombinase complex that yields factor IIa (thrombin), which in turn cleaves fibrinogen to form fibrin.

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