

## ORIGINAL ARTICLE

## ANTICARDIOLIPIN ANTIBODIES IN WOMEN HAVING RECURRENT SPONTANEOUS ABORTIONS

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**Objective:** The present study was conducted to analyze Anticardiolipin antibodies in women with recurrent spontaneous abortion. **Methods:** This was a case control study conducted from January to December 2013. A sample of 136 women, comprising of 68 cases and equal number of controls was selected according to inclusion and exclusion criteria. Strict history protocol was mandatory for women with recurrent spontaneous abortions. Women with history of immune, rheumatic, endocrine and thrombo-embolic disorders were excluded. Patients were selected through non-probability purposive sampling. Anticardiolipin antibodies were estimated by ELISA method. Data were analysed on SPSS-21. **Results:** Anticardiolipin antibodies were detected in 16.19% and 4.41% in cases and controls respectively. Mean serum levels of anticardiolipin antibodies were  $9.15 \pm 3.73$  and  $7.35 \pm 2.74$  RU/ml respectively. Platelet counts, prothrombin and activated partial thromboplastin revealed no significant differences between groups. **Conclusion:** Anticardiolipin antibodies were detected in women with recurrent spontaneous abortions.

**Keywords:** Anticardiolipin antibodies, abortion, platelet count, prothrombin time, activated partial thromboplastin time

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## INTRODUCTION

Miscarriage (spontaneous abortion) is a pregnancy that ends spontaneously before the fetus can survive. The World Health Organization defines this un-survivable state as an embryo or fetus weighing 500 grams or less, which corresponds to a fetal age (gestational age) of 20–22 weeks or less.<sup>1</sup> Recurrent miscarriage is the spontaneous loss of 3 or more consecutive pregnancies in first trimester from the same biological father. It affects 1–2% of women, in one half of whom there is no identifiable cause.<sup>2</sup>

Among the multiple factors implicated in the pathogenesis of adverse pregnancy outcome, autoimmune disorders appear to play important role. During the last two decades much attention has been drawn to the relationship between auto-antibodies and pregnancy loss. Mostly focus has been on antiphospholipid antibodies.<sup>3</sup> Anticardiolipin antibodies (ACA) are directed against cardiolipin and found in several diseases including syphilis, antiphospholipid syndrome, livedoid vasculitis, vertebrobasilar insufficiency, Behçet's syndrome, idiopathic spontaneous abortion, and systemic lupus erythematosus.<sup>4</sup> The presence of anticardiolipin antibody has been associated with recurrent arterial and venous thrombosis, recurrent foetal loss, thrombocytopenia, neurologic events including transient ischemic attack and stroke, dermatologic disease and primarily livedo reticularis.

Anticardiolipin antibodies are involved in foetal loss and recurrent abortions irrespective of the

patient having autoimmune disease or not. Serum anticardiolipin antibodies were raised in patients with recurrent abortion when comparing with controls.<sup>5</sup> Anticardiolipin antibody assay is more sensitive and specific for foetal loss in comparison to lupus anticoagulant.<sup>6</sup> Anticardiolipin antibody detection may be a sensitive method in prevention of foetal loss. This study was conducted to analyse the anticardiolipin antibodies, platelet counts, prothrombin time and activated partial thromboplastin time in women presenting with recurrent spontaneous abortions.

## SUBJECTS AND METHODS

This was a comparative study conducted at Liaquat University of Medical & Health Sciences Hospital, and Isra University Hospital, Hyderabad, Pakistan, from January to December 2013. A total of 136 women were included in the study. Sixty-eight women were selected for each of two different groups. Group I: Cases (n=68) women with history of three or more first trimester spontaneous abortions. Group II: Controls (n=68) women with one or more live births and with no history of first trimester spontaneous abortion. Women in their reproductive age with history of recurrent spontaneous abortions were included in this study. Women having immunological or rheumatic disorders, endocrine disorders, history of thrombosis and those currently on steroid or immunosuppressive therapy were excluded.

Patients' whole blood (7.5 ml) was collected by venepuncture; 2.5 ml was transferred to EDTA tube for platelet count, 2.5 ml in citrated tube for prothrombin time and activated partial thromboplastin

time, and 2.5 ml blood was taken in a gel tube, and serum was separated by centrifugation (3,000 rpm×10 min) and stored at -80 °C for analysis of antibodies. Platelet count, prothrombin time, and activated partial thromboplastin time were done with routine methods. Anticardiolipin antibodies were estimated with ELISA. Data were analysed using SPSS-21. Chi-square test and Z-test of proportion were used to compare qualitative output response, and  $p < 0.05$  was considered significant.

## RESULTS

Mean age of cases and controls was  $24.32 \pm 0.70$  and  $25.06 \pm 0.73$  years respectively. Anticardiolipin antibodies were detected in 11 (16.19%) and 3 (4.41%) in cases and controls respectively ( $p = 0.001$ ).

Mean serum levels of anticardiolipin antibodies were  $9.15 \pm 3.73$  and  $7.35 \pm 2.74$  RU/ml respectively ( $p = 0.01$ ). Non-significant differences between cases and controls in platelet counts, prothrombin, and activated partial thromboplastin time were observed ( $p > 0.05$ ). (Table-1)

**Table-1: Test parameters in cases and controls**

Test Parameters	Group I (n=68)	Group II (n=68)
Anticardiolipin antibodies positive	11 (16.19%)	3 (4.41%)
Anticardiolipin antibodies negative	57 (83.81%)	65 (95.59%)
ACA level (RU/ml)	$9.15 \pm 0.45$	$7.35 \pm 0.33$
Platelet count ( $\mu\text{L}^{-1}$ )	$232.52 \times 10^3 \pm 79 \times 10^3$	$234.26 \times 10^3 \pm 71.75 \times 10^3$
PT (Sec)	$10.82 \pm 1.88$	$10.92 \pm 2.68$
APTT (Sec)	$27.28 \pm 2.61$	$28.02 \pm 2.68$

## DISCUSSION

This study was undertaken to evaluate anticardiolipin antibodies as a causal factor in recurrent spontaneous abortion in women of our region. Anticardiolipin antibodies were found in 11 cases (16.19%) of recurrent spontaneous abortion and in 3 (4.41%) controls. Anticardiolipin antibodies as a cause of recurrent abortions have been reported by several studies.<sup>7-9</sup>

The mean serum anticardiolipin antibodies in cases and controls had significant differences. These findings are in agreement with Khan *et al*<sup>5</sup> who reported large titres of anticardiolipin antibodies in women suffering from recurrent spontaneous abortions.

The anticardiolipin antibodies are associated with foetal loss and result in recurrent abortions in women of child bearing age.<sup>4</sup> Vermlyen<sup>12</sup> has reported that the recurrent abortions were associated with venous thrombosis and thrombocytopenia. The findings of present study are also consistent with recent studies<sup>13-15</sup>.

However, the findings regarding platelet count, prothrombin time and activated partial thromboplastin time were contradictory to the previous studies as there was no significant difference between cases and controls.

## CONCLUSION

Anticardiolipin antibodies were detected in women with recurrent spontaneous abortions. Women of childbearing age with history of recurrent spontaneous abortions should be investigated for anticardiolipin antibodies.

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