



ASSOCIATION OF THYROID AUTOIMMUNITY WITH RECURRENT PREGNANCY LOSS

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ABSTRACT

PURPOSE: This study was undertaken to determine levels of Anti TPOAb in patients with recurrent pregnancy loss in Indian population during their nonpregnant state. **METHOD:** The study included 52 non pregnant women with recurrent pregnancy loss verified by ultrasound or histopathology and 52 patients with at least one successful pregnancy and no history of recurrent pregnancy loss. **RESULT:** levels of anti TPO Ab was estimated in cases and controls , mean of AntiTPO Ab in RPL patients were 28.01 ± 44.42 which were higher than mean of controls which were 5.95 ± 15.13 (p value < 0.01) which were statistically significant. **STATISTICAL ANALYSIS:** the statistical analysis was performed using student's t-test (unpaired) or Mann Whitney U test. **CONCLUSION:** This study finding suggests that higher levels of antiTPOAb are found in patients with RPL.

KEYWORDS :

INTRODUCTION

Recurrent pregnancy loss (RPL) was classically defined as the loss of three or more pregnancies [RCOG 2011]. However, the term has been revised to include two or more clinical pregnancy losses (documented by ultrasonography or histopathologic examination), but not necessarily consecutive [ACOG 2012] RPL affects approximately 1% to 2% of women, when defined as three consecutive pregnancy losses [Ford HB et al 2009] While in cases of two pregnancy losses, the prevalence of RPL increases to 5% [Stephenson M et al 2007]

The presence of thyroid autoimmunity, leads to generalized activation of the immune system and generally heightened autoimmune reactivity against the foeto-placental unit [Stagnaro-Green A et al 1990] This hypothesis is supported by the observation that women with recurrent abortions have an increased number of CD5/20-positive B cells as compared with women with a normal pregnancy or with only one abortion. In addition to this, there are quantitative and qualitative changes in endometrial T cells, increase in migration and hyperactivity of cytotoxic natural killer cells [Twig G 2012, Konava E 2010], all these factors together result in increased miscarriages rate. Anti-thyroid antibody expression has been reported both in the zona pellucida and in the follicular fluid drawn from women with thyroid autoimmunity, on the day of oocyte retrieval with a concentration positively correlated with the serum anti-Tg and anti-TPO antibodies levels. Furthermore, a lower rate of oocyte fertilization has been observed in women with thyroid autoimmunity as well as a higher rate of early miscarriage [Kelkar RL et al 2011, Monteleone P 2005].

Rushworth et al 2000 and Esplin et al [1998] found no association between antithyroid antibodies and recurrent pregnancy loss whereas Abramson and Green et al [2001] found an association between two.

Glincoer et al [2006] showed that thyroid autoantibodies indicate the abnormality of immune function, which induces miscarriage by unstable placenta implantation. Negro et al 2006 suggested that thyroid autoantibodies imply poor thyroid function during pregnancy, which might result in

clinical and subclinical hypothyroidism, increasing the risk of miscarriage.

This study is aimed at determining the anti thyroid peroxidase status in women with RPL.

MATERIAL AND METHODS

The study was performed on 52 non pregnant women with two or more spontaneous abortion between January 2019 to January 2020 in department of obstetrics and gynaecology of Kasturba Hospital Delhi. 52 age matched women without history of recurrent abortion were included in control groups. The institutional ethical committee at Kasturba hospital, Delhi approved the study.

INCLUSION CRITERIA

- ❖ Age group between 18 years to 40 years
- ❖ women with history of 2 or more than 2 consecutive abortion in first trimester

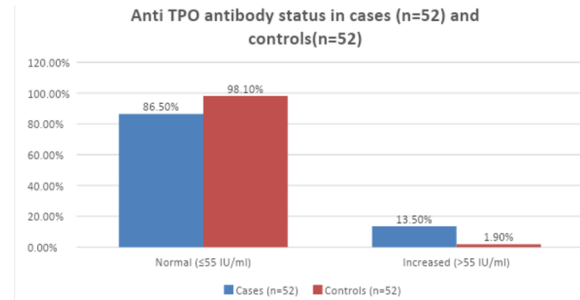
EXCLUSION CRITERIA

- ❖ Pregnant women
- ❖ ectopic pregnancy
- ❖ molar pregnancy
- ❖ biochemical pregnancy
- ❖ Women who were known case of
 - Thyroid dysfunction
 - Other autoimmunity such as type 1 diabetes mellitus
 - renal or liver disease (cirrhosis)
 - cardiac disease
- ❖ Women who had undergone thyroidectomy

All women were thoroughly examined at the institute. Age, menstrual history, education status, consanguinity, previous medical and reproductive history was recorded in the prescribed case sheet. All women selected were non pregnant at the time of study. After obtaining informed and written consent from couples in study and control groups, Anti TPO antibodies were estimated in all patients at the time of enrolment, using ELISA microwell kit using indirect ELISA of Calbiotech Company. Anti TPO was considered negative if levels are lower than 55IU/m.

RESULT**Table 1 : comparison and association of AntiTPO Ab status in Cases (n=52) and Controls (n=52)**

	Cases (n=52)		Controls (n=52)		p value
	No.	%	No.	%	
Anti TPO					
Normal (≤ 55 IU/ml)	45	86.5	51	98.1	0.06
Increased (> 55 IU/ml)	7	13.5	1	1.9	
Anti TPO (IU/ml)	28.01 \pm 44.42		5.95 \pm 15.13		<0.01

**Figure 1.anti TPO antibody status in cases and control.**

Out of 52 cases 7(13.5%) patients in cases had increased AntiTPO Ab and only 1(1.9%) of control had increased AntiTPO Ab (p value 0.06) which shows difference between cases and control was statistically not significant whereas mean of AntiTPO Ab in cases were 28.01 \pm 44.42 which were higher than mean of controls which were 5.95 \pm 15.13 (p value <0.01 of mean in cases and controls) which shows difference between levels of AntiTPO Ab (IU/ml) mean in cases and controls were statistically significant.

DISCUSSION

Thyroid hormones are essential for sustenance of the developing fetus. In the present study, 13.5% patients with RPL had increased AntiTPO Ab compared to 1.9% in the control group. While the difference between cases and controls was not significant. This was because of the small sample size of our study. While the Mean of AntiTPO Ab in patients with RPL was 28.01 \pm 44.42 which was higher than the mean of control which was 5.95 \pm 15.13 (table 15). This was because high levels of AntiTPO Ab in patients with positive AntiTPO Ab. Thus our study had shown a statistically significant association of the mean of AntiTPO Ab (IU/ml) in patients with RPL (table 14). Thyroid autoantibodies indicate the abnormality of immune function, which induces miscarriage by unstable placenta implantation.⁴⁴The present study was comparable with study conducted by **Bussen and steckm et al 1995** demonstrated significantly increased anti thyroid antibodies in euthyroid women with recurrent pregnancy loss. Similarly **Tanweer Akhtar et al 2019** reported anti thyroid antibodies in 31% of patients with recurrent pregnancy losses. Similarly, **Sathy N et al (2018)** reported Ant thyroid antibodies positive in 10% of abortions. Similarly William HKuttehM.D., et al (1998) found Antithyroid antibodies positive 22.5% in women with recurrent pregnancy loss. Stagnaro-Green et al 1990^[14] reported that risk of miscarriages in women with Thyroid autoantibody—positive was 17%. **Robert negro et al 2006** showed that Euthyroid pregnant women who were positive for TPOAb develop impaired thyroid function, which lead to increase risk of miscarriage and concluded that TPOAb⁺ patient when treated with LT₄ have lower risk of miscarriages.

CONCLUSION

Present study showed that prevalence of thyroid autoimmunity was higher in patients with history of RPL than the controls. We also found a significant association between the mean of AntiTPO Ab in patients with recurrent pregnancy losses. This study finding also suggests that higher levels of antiTPOAb are found in patients with RPL.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE: This study was approved by the institutional ethical committee and all procedures involving human participation were in accordance with the ethical standard of the institution.

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