Original Article

# Hypothyroidism in Women Can Lead to Recurrent Miscarriages

Hypothyroidism Leading to Recurrent Miscarriages

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## ABSTRACT

**Objective:** To determine the frequency of hypothyroidism inpatients presenting with the history of recurrent miscarriages at tertiary care hospital in Larkana

**Study design:** Descriptive / cross-sectional study

**Duration and place of study:** This study was conducted at Shaikh Zaid Women Hospital, Obstetrics and Gynecology Unit-II, SMBBMU, Larkana from March, 2016 to September, 2016.

**Materials Methods:** Total eightypatient having age between 18-35 years, parityat least para 1 and history of recurrent miscarriages were included in this study. After taking approval from an ethical reviewcommittee of the institute. Blood sample was taken & sent to a central laboratory for serum analysis of TSH and free T4 levels. Hypothyroid patients were treated with thyroxin. Data was collected on a predesigned proforma. The data was analysed using SPSS version 17.

**Results**: Mean age of enrolled participants was 26.8±4.3 years,the mean parity was 1.79±0.74 and 66 (82.5%), 37 (46.3%) had income <10000 a month, 22 (27.5%) had three miscarriages, the mean duration of pregnancy was 14.19±1.71 weeks, mean TSH level was 3.48±1.7 and mean free T4 level was 4.55±1.1. The frequency of hypothyroidism in patients presenting with recurrent hypothyroidism was 26 (32.5%) cases.

**Conclusion:** In conclusion, the prevalence of thyroid autoimmunity was higher in pregnant women with a history of recurrent abortion. The frequency of hypothyroidism in patients presenting with recurrent miscarriage was statistically significant in poor patients and frequency of hypothyroidism increases as a number of abortions increases.

**Key Words:** Abortion, recurrent miscarriage, hypothyroidism, Thyroid Stimulating hormone (TSH), thyroxin (T4)

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## INTRODUCTION

Recurrent miscarriage (RM) is characterized as repeated loss of pregnancies (consecutive three or more) that ends in the spontaneous miscarriage of the fetus before 20 weeks of gestation[1]. It affects about 1-2% of pregnant women [2].The etiology of miscarriage is diverse and includes uterine abnormalities (such as fibroids), genetic anomalies, hormonal and endocrinal abnormalities, anticardiolipinantibodies, chromosomal abnormalities and infectious agents[3]. Despite major advances in our understanding of the etiology of RM over the last 20 years, even after the comprehensive investigation, no cause for pregnancy failure is identified in approximately 50%of couples[4].

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Among endocrinal causes, thyroid dysfunction is an important cause of miscarriage. It is because adequate maternal thyroid function during pregnancy is critical to the mother and developing fetus.Thyroxine dose may need to be increased by30-50% in early pregnancy. Mild thyroid abnormalities are associated with an increased rate of miscarriage which is due to an impaired thyroid adaptation to pregnancy [5]. Changes in maternal thyroid function during pregnancy require an additional challenge to the maternal thyroid gland. Women who are overtly hypothyroid carry an increased risk of both early and late obstetrical complications, such as recurrent miscarriages& spontaneous abortions[6]. Primary hypothyroidism is a common disorder in women of childbearing age, with an estimated prevalence of2-3% of women cluing pregnancy [7]. Thyroid disorders are responsible for approximately 17% to 20% cases of recurrent miscarriage. The reported prevalence of spontaneous miscarriage in Pakistan is 6.5%. While it is documented that the prevalence of hypothyroidism and SCH in Pakistani population is 4.1 and 5.4%, respectively and female is predominant gender [8].Despite a data found who can show the proportion of share of hypothyroidism in the incidence of recurrent miscarriages[9]. Researches emphasized that recurrence of miscarriages associated with hypothyroidism or thyroid autoimmunity so, therefore women with the history of miscarriages need to be evaluated for thyroid

function[10] The rationale for this study is hypothyroidism is found frequently in patients of recurrent miscarriage then the current study recommend the screening of all patients whose loses their pregnancy before term. The main aim of this study is to determine the frequency of hypothyroidism in patients presenting with the history of recurrent miscarriages at tertiary care hospital in Larkana.

# MATERIALS AND METHODS

A descriptive cross sectional study was conducted for duration of six months from 14-03-2016 to 13-09-2016 at Shaikh Zaid Women Hospital, Obstetrics and Gynaecology Unit-III, SMBBMU, Larkana. In all 80 age of patient should be between 18-35 years, parity at least para 1 and history of recurrent miscarriages were included in this study. Women known case of hypothyroidism, non-thyroidal autoimmune diseases, Turners syndrome, and uterine anomalies like the bi-coronate uterus, history of urogenitalas a cause of pregnancy loss, known case of chronic hypertension, ischemic heart diseases, diabetes mellitus, renal disease, autoimmune diseases and patients using contraception were excluded.

After taking approval from an ethical review committee of the institute, patients who meet the inclusion criteria were included in this study after taking informed consent from gynecology OPD. A blood sample of participants was taken and sent to a central laboratory for serum analysis of TSH and free T4 levels (which are done free of cost from the hospital). After that, the patients were treated as per the standard protocol of institution. The researcher herself collected the data from patients on a prescribed proforma. Data were collected on demographic variables include name, age, address, the number of miscarriages (>3; with duration of each pregnancy). The primary outcome variable is the detection of hypothyroidism in these patients of recurrent miscarriage.

**Statistics:** All data were entered and analyzed in SPSS version 18. Mean & standard deviation (Mean ± SD) were expressed for the continuous variables. Frequencies and percentages were expressed for categorical variables. To evaluate the effect modification, the effectmodifiers were stratified followed by application of chi-square with a p-value <0.05 taken as significant.

# RESULTS

A total of 80 patients were enrolled in this study during the study period. The mean age of enrolled participants was 26.8±4.3 years, the mean parity was 1.79±0.74 and 66 (82.5%) has parity of 2, 37 (46.3%) had income <10000 a month, 22 (27.5%) had three miscarriages, the mean duration of pregnancy was 14.19±1.71 weeks and 43 (53.8%) had duration of pregnancy <14 weeks and mean TSH level was 3.48±1.7 and mean free T4 level was 4.55±1.1.The frequency of hypothyroidism in patients presenting with recurrent hypothyroidism was 26 (32.5%) cases (Table 1).

Of patients, the frequency of hypothyroidism in patients presenting with recurrent miscarriage was high in <25 years of age is 15 (34.1%) whilethe frequency of hypothyroidism in patients presenting with recurrent miscarriage was 24 (36.4%) in parity 2. However, the frequency of hypothyroidism in patients presenting with recurrent miscarriage was 17 (45.9%) in poor class and the frequency of hypothyroidismin patients presenting with recurrent miscarriage was 54.5%) in patients with 3 miscarriage. Of patients with duration of pregnancy of <14 weeks, the frequency of hypothyroidism in patients presenting with recurrent miscarriage was 17 (39.5%). (Table 2)

**Table No.1: Demographic profile of Enrolled Participants**

| Variables | | Percentage | Mean±SD |
|---|---|---|---|
| **Age (years)** | <25 | 55% | 26.8±4.3 years |
| | >25 | 45% | |
| **Parity** | para 2 | 82.50% | 1.79±0.74 |
| | para >2 | 17.50% | |
| **Duration of pregnancy** | <14 weeks | 53.75% | 14.19±1.71 weeks |
| | >14 weeks | 46.25% | |
| **Income distribution** | Poor class (10,000) | 46.25% | |
| | Middle class (10,000-50,000) | 36.25% | |
| | High class (>50,000) | 17.50% | |
| **No. of miscarriages** | One | 28.75% | |
| | Two | 33.75% | |
| | Three | 27.50% | |
| | Four | 10% | |
| **Status of Hypothyroidism** | Yes | 32.50% | TSH (3.48±1.7) |
| | No | 67.50% | T4 (4.5±1.1) |

**Table No.2: Stratified analysis of frequency of hypothyroidism in women with age, parity, income, no of miscarriages and duration of pregnancy.**

| Variables | | Hypothyroidism | | P-VALUES |
|---|---|---|---|---|
| | | Yes | NO | |
| Age (years) | <25 (n= 44) | 15(34.10%) | 29(65.9%) | 0.463 |
| | >25 (n=36) | 11 (30.60%) | 25(69.4%) | |
| Parity | Para 2 (n=66) | 24(36.4%) | 42(63.6%) | |
| | Para >2 (n=14) | 2(14.30) | 12(85.70%) | 0.095 |
| Income | Poor class (<10,000) n=37 | 17 (45.9%) | 20 (54.1%) | |
| | Middle class (10,000-50,000) n=29 | 7 (24.1%) | 22 (75.9%) | |
| | High class (>50,000) n=14 | 2 (14.3%) | 12 (85.70%) | 0.048 |
| Number of miscarriage | one (n=23) | 5 (21.70%) | 18 (78.30%) | |
| | Two (n=27) | 6 (22.20%) | 21 (77.80%) | |
| | Three (n=22) | 12 (54.50%) | 10 (45.50%) | |
| | Four (n=8) | 3 (37.50%) | 5 (62.50%) | 0.058 |
| Mean duration of pregnancy | <14 weeks (n=43) | 17 (39.5%) | 26 (60.5%) | |
| | >14 weeks (n=37) | 9 (24.3%) | 28 (75.7%) | 0.113 |

# DISCUSSION

Thyroid hormones are essential for the developing fetus. Hence a pregnant woman needs thyroxine more than non-pregnant lady to provide T4 to both herself and her developing fetus. The fetus's thyroid gland is not fully functional until after 12 weeks of pregnancy. If the mother does not have sufficient thyroid hormones, she may be at increased risk of miscarriage [11]. Since the majority of women are not sure that they are pregnant until four to six weeks after the last menstrual period, they do not go to see doctors and test their thyroid function until the first trimester is more than half over. It is advisable to suggest thyroid investigation to the pregnant women with history of recurrent miscarriage as soon as possible after knowing they are pregnant [12].

In a study, the overall incidence of hypothyroidism was 2.5%, whereas overt thyroid deficiency was in 1.3 per 1000. The incidence of subclinical hypothyroidism in all women between 18-45 years is about 5 percent. The potent risk factor being heredity whereas other risk factors include type 1 diabetes and anti-microsomal antibodies [13].

Deficiency of iodine has been proved to cause excessive miscarriage. Likewise, thyroid antibodies were associated with an increased incidence of abortion despite the lack of overt hypothyroidism[14].The underlying mechanism behind hypothyroidism is not clear. However, it is postulated that the presence of thyroid autoantibodies reflects a generalized activation of the immune system and a generally heightened autoimmune reactivity against the fetoplacental unit. Most but not all studies have shown a significant association between the presences of thyroidantibodies and a higher miscarriage rate. However, patients with high titers of thyroid autoantibodies do not show a higher rate of miscarriages compared with patients with low titers. The mechanisms involved still remains unclear [15].

The systemic review and meta-analysis showed a positive association of pregnancy loss with thyroid antibodies with an incidence of 17-33%. In a study, the incidence of hypothyroidism was 5.71%, whereas others have found that it is no greater incidence than normal control [16]. However there seems to be higher incidence of co-existence of multiple endocrine abnormalities in some women, but in this study, only 1 women had both diabetes mellitus and recurrent pregnancy loss [17 and 18].

In our study, the frequency of hypothyroidism in patients presenting with recurrent hypothyroidism was 26 (32.5%) cases. Similarly, in a study, of 100 pregnant patients with previous recurrent miscarriage, thyroid autoimmunity (anti-TPO O34 U/ml) was found in 31% P-0.031) and subclinical hypothyroidism was observed in 27% (P-0.74) of the cases. The incidence ofsubclinical hypothyroidism was higher in the TPOAbC group than in the TPOAbK group (52 vs 16%;P-0.0002).12In a follow-up study in which pregnancy outcome was evaluated in 42 euthyroid women with a history of three or more consecutive, first trimester abortions, 31% had thyroid autoantibodies [19]

Future research, within the setting of clinical trials, should focus on the potential health gain of identification, and effect of treatment, of thyroid disease on pregnancy outcome. Furthermore, it was recently shown that thyroxine administration to pregnant women with positive thyroid autoantibodies and a history of recurrent abortions may improve the final outcome[20].

# CONCLUSION

In conclusion, the prevalence of thyroid autoimmunity was higher in pregnant women with a history of recurrent abortion. The frequency of hypothyroidism in

patients presenting with recurrent miscarriage was statistically significant in poor patients and frequency of hypothyroidism increases as a number of abortions increases.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Tanweer Akhtar |
| Drafting: | Shazia Shaikh |
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**Conflict of Interest:** The study has no conflict of interest to declare by any author.

# REFERENCES


1. Stagnaro-Green A, Abalovich M, Alexander E, Azizi F, Mestman J, Negro R, et al. Guidelines of the American Thyroid Association for the diagnosis and management of thyroid disease during pregnancy and postpartum. Thyroid 2011; 21(10):1081-125...
2. Bruckner TA, Mortensen LH, Catalano RA. Bruckner, et al. Respond to "Preventable Pregnancy Loss Is a Public Health Problem". Am J Epidemiol 2016;183(8):713-4.
3. Shahine L, Lathi R. Recurrent pregnancy loss: evaluation and treatment. Obstetrics and Gynecol Clinics 2015; 42(1):117-34.
4. Chang J, Boulet SL, Jeng G, Flowers L, Kissin DM. Outcomes of in vitro fertilization with preimplantation genetic diagnosis: an analysis of the United States Assisted Reproductive Technology Surveillance Data, 2011–2012. Fertility and sterility 2016;105(2):394-400...
5. Grati FR, Gallazzi G, Branca L, Maggi F, Simoni G, Yaron Y. An evidence-based scoring system for prioritizing mosaic aneuploid embryos following preimplantation genetic screening. Reproductive biomedicine online 2018;36(4):442-9.
6. Chang J, Boulet SL, Jeng G, Flowers L, Kissin DM. Outcomes of in vitro fertilization with preimplantation genetic diagnosis: an analysis of the United States Assisted Reproductive Technology Surveillance Data, 2011–2012. Fertility and sterility 2016; 105(2):394-400.
7. Belhomme N, Le Noir De Carlan M, Lescoat A, Le Gallou T, Rouget F, Loget P, et al. Investigating in utero fetal death: outcome of internal medicine consultation.Int J Rheumatic Dis 2018;21(2):381-6.
8. Cheunsuchon B. Renal vascular lesions in systemic lupus erythematosus. Siriraj Med J 2017;61(3): 160-3.
9. Verabelly M, Seedipally S. Association of recurrent pregnancy loss and anticardiolipin antibodies: prevalence and prognosis of subsequent pregnancy in women with recurrent pregnancy loss. International J Reproduction, Contraception, Obstet Gynecol 2017;7(1):74-9.
10. Chan S, Boelaert K. Optimal management of hypothyroidism, hypothyroxinaemia and euthyroid TPO antibody positivity preconception and in pregnancy. Clin Endocrinol 2015;82(3):313-26...
11. Verabelly M, Seedipally S. Association of recurrent pregnancy loss and anticardiolipin antibodies: prevalence and prognosis of subsequent pregnancy in women with recurrent pregnancy loss. Int J Reproduction, Contraception, Obstet Gynecol 2017; 7(1):74-9.
12. Hardy K, Hardy PJ. 1st trimester miscarriage: four decades of study. Translational Pediatr 2015; 4(2):189.
13. Maru L, Joshi D, Dave A, Verma M. Rare case of huge central cervical myoma-resected in toto without complication. Ind Obstet Gynaecol 2015; 5(1).
14. Lyngsø J, Ramlau-Hansen CH, Bay B, Ingerslev HJ, Hulman A, Kesmodel US. Association between coffee or caffeine consumption and fecundity and fertility: a systematic review and dose–response meta-analysis. Clin Epidemiol 2017; 9:699.
15. McQueen DB, Bernardi LA, Stephenson MD. Chronic endometritis in women with recurrent early pregnancy loss and/or fetal demise. Fertil Steril 2014.
16. Sugiura-Ogasawara M, Atsumi T, Yamada H, Kitaori T, Ozaki Y, Katano K, Murashima A. Real-world practice of obstetricians in respect of assays for antiphospholipid antibodies. Modern Rheumatol 2015; 25(6):883-7.
17. Roy D. A study of mullerian duct anomaly on reproductive age group. JEMDS 2015; 4(70): 12143-51.
18. Thubert T, Foulot H, Vinchant M, Santulli P, Marzouk P, Borghese B, et al. Surgical treatment: Myomectomy and hysterectomy; Endoscopy: A major advancement. Best Practice & Research Clin Obstet Gynaecol 2016; 34:104-21.
19. Lata I, Outta P, Sridhar S, Rohilla M, Srinivasan A, Prashad GR, et al. Thyroid autoimmunity and obstetric outcomes in women with recurrent miscarriage: a case-control study. Endocr Connect 2013;2(4118-24).
20. Thubert T, Foulot H, Vinchant M, Santulli P, Marzouk P, Borghese B, et al. Surgical treatment: Myomectomy and hysterectomy; Endoscopy: A major advancement. Best Practice & Research Clin Obstet Gynaecol 2016;34:104-21.