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RESEARCH ARTICLE

SUBCLINICAL HYPOTHYROIDISM IN EARLY GESTATION: PREGNANCY OUTCOME IN TREATED AND UNTREATED WOMEN

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Key Words:

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Abstract

Background: Thyroid disorders are among the most common endocrine disorders in pregnancy. Signs and symptoms of SCH are variable, often asymptomatic. Mostly SCH is a laboratory diagnosis; Risk factors include personal or family history of thyroid dysfunction, advanced maternal age, diabetes, other autoimmune disorders and morbid obesity.

Objective: To investigate the outcome of pregnancy in women detected to have subclinical hypothyroidism in early gestation and to evaluate whether treatment of subclinical hypothyroidism reduces the adverse pregnancy outcome.

Methods: A total of 200 subclinical hypothyroid pregnant women in their first trimester of pregnancy (TSH > 2.5-6mU/L) were included in the study. Out of these 100 women received treatment with thyroxine (group A) and 100 were left untreated and acted as controls (group B).

Results: The mean age of both the groups was 25 years. In obstetric score; most of the women were primigravida. Antenatal complications like GDM, PIH, small for gestational age and preterm delivery were observed almost equally. In the mode of delivery, 67 women in the treated group and 78 women in the control group delivered vaginally at term. Majority of newborns in both the groups had birth weight in the range of >2.5 to <3.5 kg.

Conclusion: In pregnant women with SCH (TSH >2.5-6mU/L and normal T4 level), treatment with thyroxine does not have any association in reducing the incidence of preterm labour, gestational diabetes or hypertension. Neonatal outcome was normal in both the groups.

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Introduction:-

Subclinical hypothyroidism is defined as serum TSH level between 2.5 and 10 mIU and a serum free T4 level within normal range¹. TSH levels are generally low during pregnancy because HCG level increases during first trimester which stimulates thyroid just like TSH. During pregnancy normal range of TSH during first trimester is 2.5 mIU/L and 3.0 mIU/L during second and third trimesters². In India incidence of subclinical hypothyroidism during pregnancy is 13%³. Various causes of hypothyroidism include iodine deficiency, congenital diseases, viral thyroiditis, autoimmune thyroiditis, postoperative and ablative changes. Thyroid peroxidase antibodies and thyroglobulin antibodies are seen in a significant number of patients with hypothyroidism and subclinical hypothyroidism. In comparison with overt hypothyroidism the impact of SCH on pregnancy is unclear⁴.

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There are many studies which have reported adverse effects of SCH on pregnancy and neonatal outcome, these associations include pregnancy loss, preterm delivery, gestational diabetes, gestational hypertension, preeclampsia, placental abruption, premature rupture of membranes, intrauterine growth restriction, low birth weight, small for gestational age, low APGAR score and neonatal death⁵⁻¹⁰ similarly other studies however have not found any adverse outcomes associated with SCH¹¹⁻¹³.

Causes:

1. Iodine deficiency
2. Congenital
3. Postoperative or ablative changes
4. Viral thyroiditis
5. Autoimmune thyroiditis

Diagnosis:

1. Mostly SCH is a laboratory diagnosis
2. However when to suspect if
3. Personal or family history
4. Advanced maternal age
5. Diabetes or other autoimmune disorders
6. Morbid obesity

Trimester specific range:

1. 1st trimester TSH 0.1-2.5 mIU/L
2. 2nd trimester TSH 0.2-3 mIU/L
3. 3rd trimester TSH 0.3-3 mIU/L

SCH can lead to:

1. Placental abruption
2. Preterm labour
3. Diabetes
4. Gestational hypertension
5. Neonatal complications like
6. Neurological deficits
7. Respiratory distress syndrome

Currently there is no evidence that identification and treatment of SCH during pregnancy improve these outcomes. No consensus has been reached about the need for universal thyroid screening and the treatment of subclinical hypothyroidism in pregnancy.

Methodology:-

This prospective randomized study was conducted in Department of Obstetrics and Gynaecology, Government Medical College Srinagar. A total of 200 pregnant women having TSH value between 2.5-6 mIU/L were taken. Half of patients received treatment as (Group A) and another half were left untreated as controls (Group B).

Inclusion criteria:

1. All pregnant women who have subclinical hypothyroidism in 1st trimester of pregnancy.
2. Singleton pregnancy.

Exclusion criteria:

1. Pregnant women with overt hypothyroidism.
2. Pregnant women with subclinical hypothyroidism having TSH > 6 mIU/L but < 10 mIU/L.
3. Pregnant women with medical complications like chronic hypertension, overt diabetes.
4. Multiple pregnancy.

The selected group received 25-50 mcg thyroxine daily. They were followed till delivery and the outcome compared in both groups.

Results:-

Table 1:- Maternal age.

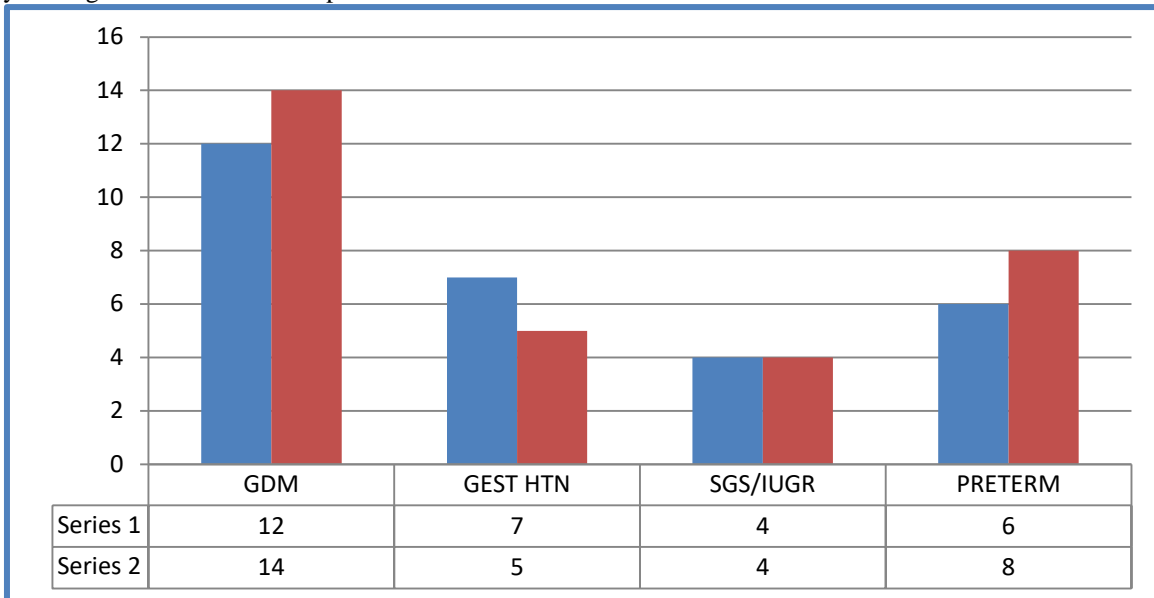
Age (years)	Group A	Group B
<20	9	16
21-30	72	66
>30	19	18

From group A most of the patients (72) corresponds to age group 21-30 years and among group B most of the patients (66) corresponds to same age group.

Table 2:- Obstetric Score.

GPLA	Group A	Group B
G1	49	55
G2A1,G3A2	20	11
G2PIL1 and above	31	34

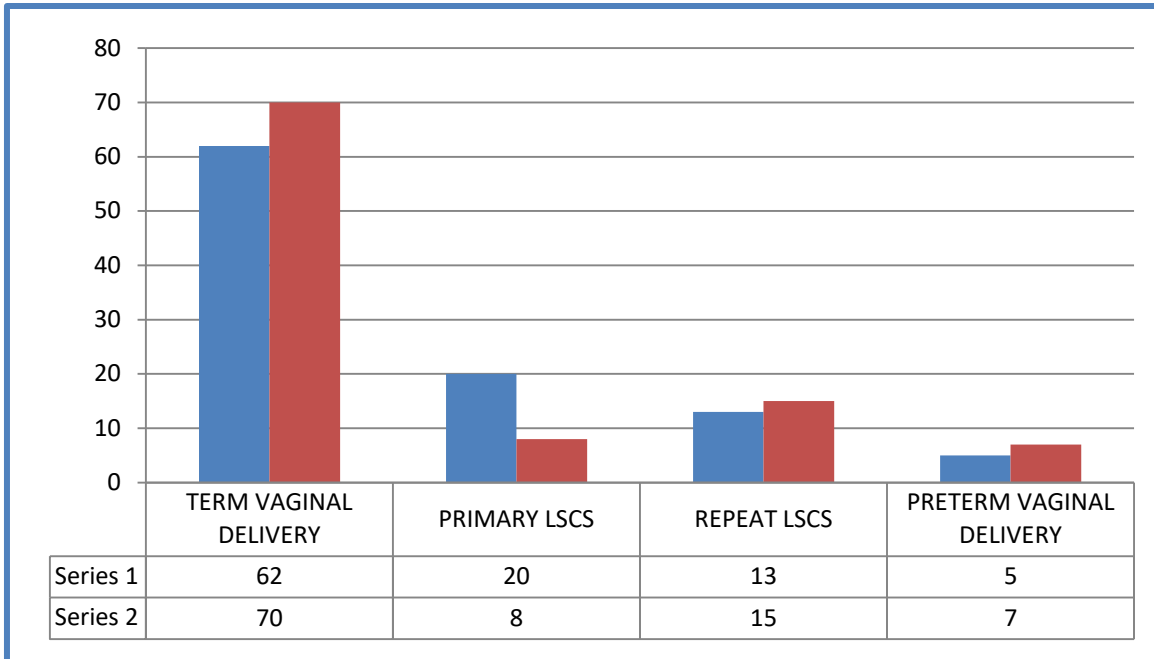
In the obstetric score, primigravidas were highest in number from both the groups. There was a significant difference in the number of two groups regarding women with previous abortions (G2A1,G3A2) ($\chi^2 = 4.26, p < 0.05$). In our study multi gravida were also comparable.



Series 1 = Cases; Series 2 = Controls

Antenatal Complications:

Gestational Diabetes was found in 12 cases from group A and 14 controls from group B. Gestational hypertension was found in 7 cases from group A and 5 controls from group B. SGA /IUGR was found in 4 cases from both groups. Preterm deliveries were found in 6 cases from group A and 8 controls from group B. From above results we observed almost equal results in both groups.



Series 1 = Cases; Series 2 = Controls

In the mode of delivery 62 women from treated group and 70 women in the control group delivered vaginally at term and there was no significant difference ($\chi^2 = 0.49, p > 0.05$). In the treated group 20 cases delivered by primary LSCS whereas among controls 8 women delivered by primary LSCS, there was significant difference in both groups ($\chi^2 = 5.82, p < 0.05$). The number of repeat caesarean section and preterm vaginal delivery were comparable in the two groups.

Table 3:- Gestational Age At Delivery.

Gestational age (weeks)	Group A	Group B
< 34	5	4
>34 to <37	4	6
>37	91	90

Regarding the gestational age at delivery, 5 cases from group A and 4 controls from group B delivered less than 34 weeks whereas 4 cases from group A and 6 controls from group B delivered between 34 to 37 weeks. Majority of women delivered after 37 weeks and the numbers were 91 from group A and 90 from group B.

Table 4:- Birth Weight At Delivery.

Birth Weight (KG)	Group A	Group B
<2.5	18	19
>2.5 TO <3.5	74	71
>3.5	8	10

Majority of newborns in both groups had birth weight in the range of >2.5 to <3.5 kg. The mean birth weight in the treated group was 2.75kg and in the control group was 2.84 kg and there was no significant difference ($p \text{ value} = > 0.05$).

Discussion:-

TSH levels are generally lower throughout the pregnancy especially during the 1st trimester when HCG levels peak. Subclinical hypothyroidism is found to have a high risk for placental abruption, preterm labour, gestational hypertension, diabetes and neurodevelopmental delay in the baby. Multiple studies done earlier emphasized the treatment for SCH in early pregnancy. In the present study pregnant women with SCH and TSH level <6mu/l were selected and were divided into two groups. Group A received thyroxine and group B were given placebo. They were

evaluated for development of complications and was found that both the groups had almost equal number of complications. These results were similar to study by Cleary-Goldman et al done as part of FASTER trial¹¹.

However observations made by Casey BM and associates¹⁴ were different, they found significant increase in placental abruption, preterm labour and neonatal respiratory distress among patients who were not treated. The mean age of both the groups and the gestational age at delivery was comparable among both the groups in our study. In the obstetric score, significant number of women with previous abortion were from group A. Among the mode of delivery in the present study, statistically significant difference was found in the primary caesarean rate. There was no significant difference in the average birth weight of newborns in both the groups. Casey BM¹⁴ and associates found that although SCH has been associated with severe obstetric complications there has been no direct evidence that levothyroxine therapy reduces these risks. Similar observation was made in present study.

Conclusion:-

In pregnant women with SCH (TSH > 2.5-6 mu/l and normal T4 level) treatment with thyroxine does not have any association in reducing the incidence of complications. Experts in 2011 opine that even if subclinical hypothyroidism is diagnosed insufficient evidence exists either for or against a recommendation for treatment with a low dose of thyroxine. So universal screening of all pregnant women for SCH is not recommended.

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