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Original Research Article

Pregnancy outcome in women treated for subclinical hypothyroidism detected in early gestation

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ABSTRACT

Background: Thyroid disorders are among the most common endocrine disorders in pregnancy. Objective of present study were to investigate the outcome of pregnancy in those women detected to have subclinical hypothyroidism in early gestation and to evaluate whether treatment of subclinical hypothyroidism reduces the adverse pregnancy outcome.
Methods: Pregnant women detected to have Subclinical hypothyroidism (TSH >2.5- 6 mU/L and N Free T4) in the 1st trimester were selected and randomly divided into 2 groups. One group received treatment with Thyroxine. They were followed up till delivery and outcome noted.
Results: The mean maternal age of both the group was 26 yrs. The gestational age at delivery and the newborn birth weight did not show any statistically significant difference. Antenatal complications like Gestational Diabetes, hypertension, small for gestation, and preterm were almost the same in both groups. There was significant increase in the primary caesarean rate in the treated group. No significant difference in the number of term vaginal delivery in both groups.
Conclusions: Treatment of women with SCH (TSH <6 mU/L) does not reduce the risk of adverse pregnancy outcome. Benefits of treatment need to be weighed against any potential risks.

Keywords: Gestational hypertension, Gestational diabetes mellitus, Subclinical hypothyroidism, Thyroxine

INTRODUCTION

Thyroid disorders are among the most common endocrine disorders in pregnancy. In India, about 13% of all pregnancies are affected by hypothyroidism.[1] Subclinical hypothyroidism (SCH) is detected in about 2.3% of pregnant women.[2] It is defined as an elevated serum TSH level between 2.5 and 10mU/L and a serum free T4 level that is within the normal lab and trimester specific reference ranges.

Causes of hypothyroidism include iodine deficiency, congenital, postoperative or ablative changes, viral thyroiditis, autoimmune thyroiditis. Thyroid peroxidise antibodies and thyroglobulin antibodies are detectable in a significant number of patients with hypothyroidism and subclinical hypothyroidism.

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, morbid obesity.

TSH levels are generally lower throughout pregnancy, especially during the first trimester when the hCG levels peak. The trimester specific reference range recommended by American Thyroid Association guidelines is 1st Trimester TSH 0.1-2.5, 2nd trimester TSH 0.2-3, 3rd trimester TSH 0.3-3.[3] No consensus has been

reached about the need for universal thyroid screening and the treatment of subclinical hypothyroidism in pregnancy.[4]

SCH can lead to placental abruption, preterm labour, diabetes, gestational hypertension and neonatal complications like neurological deficits and respiratory distress syndrome.[5-8] Currently there is no evidence that identification and treatment of SCH during pregnancy improve these outcomes.[9]

METHODS

Prospective randomized study conducted in a 650-bedded tertiary care centre. A total of 160 pregnant women detected to have subclinical hypothyroidism in their 1st trimester of pregnancy (TSH value >2.5 - 6 mU/L) were included in the study. Out of these 80 women received treatment with Thyroxine (Group A) and 80 were left untreated and acted as controls (Group B).

Inclusion criteria

- All pregnant women booked in our Antenatal clinic detected to have subclinical hypothyroidism in 1st trimester of pregnancy
- Singleton pregnancy.

Exclusion criteria

- Pregnant women with overt hypothyroidism
- Pregnant women with subclinical hypothyroidism having TSH >6 mU/L but <10mU/ L
- Pregnant women with medical complications like chronic hypertension, overt diabetes
- Multiple pregnancy.

The selected women and their relatives were informed about the study in detail and consent obtained. The treatment group [Group A] received 12.5-25 mcg thyroxine daily. They were followed up till delivery and the outcome compared in both groups. The recorded data were statistically analysed.

RESULTS

The mean age of both groups was 26 yrs, the p value was > 0.05 indicating that the two groups are comparable.

Table 1: Maternal age.

Age (years)	Group A	Group B
≤20	3	10
21-30	65	59
>30	12	11

In the obstetric score, most of the women were primi gravida [G1] in both groups. There is significant difference seen in the number of two groups regarding women with previous abortion (G2A1, G3A2) (X^2 = 4.765, df=1, p = <0.05). Number of multi gravida were also comparable.

Table 2: Obstetric score.

GPLA	Group A	Group B
G1	43	49
G2A1, G3A2	13	4
G2P1L1 and above	24	27

Antenatal complications like Gestational Diabetes, Gestational Hypertension, small for gestation/ Intra uterine growth restriction and preterm delivery were observed almost equally in both case and control groups.

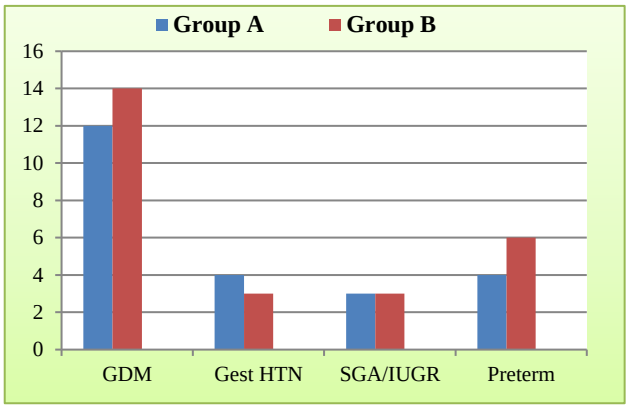

Figure 1: Antenatal complication.

In the mode of delivery, 46 women in the treated group and 53 women in the control group delivered vaginally at term and there was no significant difference (X^2 = 0.495, df =1, p >0.05). In the primary caesarean rate significant difference was observed in both groups (X^2 = 5.828, df=1, p <0.05). The number of repeat caesarean section and preterm vaginal delivery were comparable in the two groups.

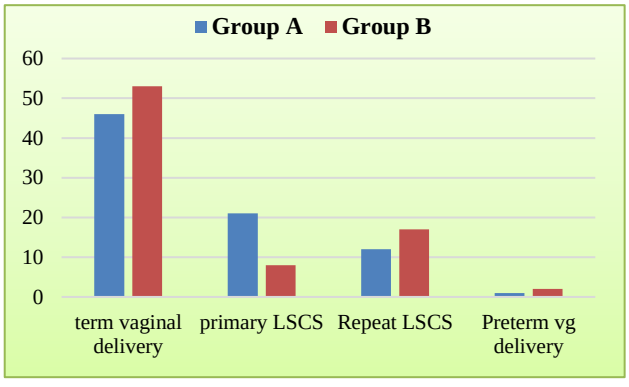

Figure 2: Mode of delivery.

Regarding the gestational age at delivery, in the ≤34 weeks group, 3 women were from the treated group and only one from the control group. Majority of women delivered after 37 weeks and the numbers were comparable in both the groups.

Table 3: Gestational age at delivery.

Gestational age (weeks)	Group A	Group B
≤34	3	1
>34 to <37	1	5
≥37	76	74

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 2.86 Kg and in the control group was 2.99 and there was no significant difference (t=1.384, df =158, p value= >0.05).

Table 4: Birth weight.

Birth weight (Kg)	Group A	Group B
≤2.5	13	13
>2.5 to <3.5	62	59
≥3.5	5	8

DISCUSSION

TSH levels are generally lower throughout the pregnancy, especially during the 1st trimester when HCG levels peak. Subclinical hypothyroidism (SCH) is found to have a high risk for placental abruption, preterm labour, Gestational hypertension, Diabetes and neuro developmental delay in the baby. Hence earlier studies emphasised the treatment for SCH in early pregnancy.[5,10] In the present study, pregnant women with SCH and TSH level <6 mU/L were selected, and half were treated with Thyroxine. They were evaluated for development of complications and was found that both the groups had almost equal number of complication. This was comparable to the study by Cleary- Goldman et al done as part of FASTER trial.[10] They did not find any increased risk for Pre-eclampsia, placental abruption, preterm delivery, gestational diabetes or fetal death. Similar observation was also made by Negro et al.[11] This is in contrast to the observation made by Casey BM and associates.[5] They did a prospective study on pregnancy complications with SCH and found significant increase in placental abruption, preterm labour and neonatal respiratory distress.

Table 5: Comparison of mode of delivery.

Mode of delivery	X^2	Df	P value
Term vaginal delivery	0.495	1	>0.05
Primary LSCS	5.828	1	<0.05
Repeat LSCS	0.862	1	>0.05

The mean age of both the groups and the gestational age at delivery was comparable in our study. In the Obstetric score, significant number of women with previous abortion were in the Group A (X^2= 4.765, df=1, p <0.05) and 3 out of 13 developed GDM.

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 new-borns in both the groups.

Table 6: Comparison of neonatal birth weight.

Group	Sample size	Mean (kg)	SD	T	Df	P value
A	80	2.86	0.5967	1.384	158	>0.05
B	80	2.99	0.5915			

Present study demonstrated a good neonatal outcome in both the groups. This is comparable to the study of Mannistol and colleagues, who evaluated the relationship between pregnancy outcome and thyroid function at 12 weeks of gestation 12. They found no adverse consequence on perinatal mortality.

Experts in 2011, opine that if subclinical hypothyroidism is diagnosed either by symptoms or by risk factors, insufficient evidence exists either for or against a recommendation for treatment with a low dose of levothyroxine.[4] They did not recommend Universal screening of all pregnant women for hypothyroidism. Brian M Casey and associates 13 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. The development of GDM, Gestational hypertension, small for gestation and preterm delivery in both the groups were comparable. None of them had placental abruption.

CONCLUSION

Subclinical hypothyroidism is one of the commonest thyroid disorders in pregnancy. 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 preterm labour, Gestational Diabetes or Hypertension. Neonatal outcome was normal in both the groups. Overall maternal and neonatal outcome is comparable in both the groups. Benefits of treatment need to be weighed against any potential risks. Over treatment of subclinical hypothyroidism can cause iatrogenic hyperthyroidism.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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