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A Study on the Prevalence of Hypothyroidism and Fetomaternal Outcomes in Pregnant Patients Attending a Tertiary Care Hospital

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Abstract **Original Research Article**

This prospective study was carried out in Gauhati Medical College and hospital from April 2018 to May 2019. The main aim of the study was to find the prevalence of hypothyroidism, overt hypothyroidism and subclinical hypothyroidism in patients attending antenatal OPD and their fetomaternaloutcomes. The study was done in 400 women with single pregnancy of age 18-35years`with no associated medical illness and no prior history of hypothyroidism with informed consent. Serum TSH was done in first visit and patients with raised TSH were advised fT3, fT4 and anti TPO antibody and were followed up till their delivery. The prevalence of hypothyroidism is high (46.75%). There is significant increase in spontaneous abortion (p=0.013), gestational hypertension (p=0.025), preterm birth (p=0.008) and neonatal jaundice (p=0.039) in hypothyroid cases. There is increased incidence of spontaneous abortion (p=0.009) and still birth (p=0.003) in anti TPO antibody positive cases.

Keywords: Pregnancy, Hypothyroidism, Subclinicalhypothyroidism, OvertHypothyroidism, Euthyroidism.

INTRODUCTION

The prevalence of hypothyroidism during pregnancy is estimated as 0.3-0.5% for overt hypothyroidism and 2-3% in subclinical hypothyroidism (SCH) [1, 2]. Levothyroxine requirement in pregnancy increases to about 25-30% and in some cases to about 50% [3, 4]. Women with hypothyroidism should have TSH and fT4 checked once pregnancy is confirmed. Thyroid function tests should be checked every 4-6weeks until TSH becomes normal.

Serum TSH concentration is the initial and the most reliable test for assessing thyroid function in pregnancy [5]. Pregnancy is a state of increased thyroid hormone demand which leads to an increase in thyroid hormone synthesis by as much as 50% [3, 4].

The most common cause of OH in pregnancy is chronic auto immune thyroiditis (HASHIMOTO'S THYROIDITIS). Subclinical hypothyroidism in pregnancy is associated with eclampsia, placentalabnormalities, miscarriage, pretermlabour and low birth weight.

A high serum TSH suggests hypothyroidism and measurement of serum fT4 levels distinguish between subclinical hypothyroidism (SCH) and overt hypothyroidism (OH), depending on whether fT4 is normal or below normal for gestational age. Determination of thyroid antibodies, thyroid peroxidase (TPO-Ab) and thyroglobulin (TG-Ab) confirms the auto immune origin of the disorder [6].

OBJECTIVES

1. To find the prevalence of hypothyroidism in pregnant patients attending GMCH.
2. To find the maternal and fetal outcomes of subclinical and overt hypothyroidism.

MATERIALS AND METHODS

The study was conducted in Obstetrics and Gynaecology department in Gauhati Medical College and Hospital from April 2018 to May 2019.

400 cases attending antenatal OPD were taken and patients with high TSH were advised fT3, fT4 and anti TPO antibody and were followed up till delivery.

CASE SELECTION

Inclusion Criteria

- Pregnant females with single intra uterine pregnancy.
- Age 18 to 35 years.

Exclusion Criteria

- Pregnant women with known hypothyroidism on medication.
- Pregnant women with associated medical illness.
- Pregnant women not willing to give consent.
- Drop outs.
- Non co–operative patients.

RESULTS AND DISCUSSION

MEAN AGE

In our study, patients were from 18-35years and mean age is 24.88±4.14years.

Das Diganta *et al*., [7] found mean age 23.93±4.44years.

Nambiar Vimal *et al.*, [8] found mean age as 25.19±4.17years.

PREVALENCE OF HYPOTHYROIDISM

The prevalence of hypothyroidism in this study is 46.75% out of which 37.25% were subclinical hypothyroid and 9.50% were overt hypothyroid. Das Diganta [7] found 52.01% had subclinical hypothyroidism and 1.72% had overt hypothyroidism. Rooplekha Chauhan *et al*., [9] found the prevalence of hypothyroidism as 23.6% where 21.6% were subclinical hypothyroid and 2% were overt hypothyroid. The prevalence of hypothyroidism in our study is high as Assam falls under the endemic goitre belt.

SPONTANEOUS ABORTION AND HYPOTHYROIDISM

Spontaneous abortion seen in 20.2% euthyroid cases, 44.7% overt hypothyroid cases and 24.2% subclinical hypothyroid cases. Anupama Dave[10] found 2.2% cases had spontaneous abortion of which 28.5% cases were euthyroid and 71.4% cases were hypothyroid (p=0.001)

Table-1: Spontaneous Abortion and Hypothyroidism

SPONT ABORTION	Euthyroid	Overt Hypothyroidism	Subclinical Hypothyroidism	Total	P value
No	170(79.8%)	22(55.3%)	111 (75.80%)	303	
Yes	43 (20.2%)	16(44.7%)	38 (24.20%)	97	
Total	213 (100%)	38 (100%)	149 (100%)	400	0.013

PRETERM DELIVERY AND HYPOTHYOIDISM

In our study 12.2% euthyroid cases, 31.6% overt hypothyroid cases and 18.8% subclinical hypothyroid cases had preterm delivery. Deepika Sharma *et al.*, [11] found that 20% cases of subclinical hypothyroidism and 33.3% cases of overt hypothyroidism had preterm delivery.

Table-2: Preterm Delivery & Hypothyroidism

GESTATIONAL AGE	EUTHYROID	OVERT HYPOTHYROID	SUBCLINICAL HYPOTHYROID	TOTAL	P value
TERM	187(87.8%)	26(68.4%)	121(81.2%)	334	
PRETERM	26(12.2%)	12(31.6%)	28(18.8%)	66	
TOTAL	213(100%)	38(100%)	149(100%)	400	0.008

GESTATIONAL HYPERTENSION (PIH) WITH HYPOTHYROIDISM

In our study PIH is seen in 19.7% euthyroid cases, 26.3% overt hypothyroid cases and 32.2% SCH cases. Deepika Sharma *et al.*, [11] found relation between preeclampsia and hypothyroidism and found 33.3% cases of hypothyroidism had preeclampsia.

Table-3: PIH WITH HYPOTHYROIDISM

	EUTHYROID	OVERT HYPOTHYROID	SUBCLINICAL HYPOTHYROID	TOTAL	P value
NORMAL BP	171(80.3%)	28(73.7%)	101(67.8%)	300	
PIH (≥140/90mmhg)	42(19.7%)	10(26.3%)	48(32.2%)	100	
Total	213(100%)	38(100%)	149(100%)	400	0.025

NEONATAL JAUNDICE AND HYPOTHYROIDISM

In our study neonatal jaundice seen in 32.4% euthyroid, 31.6% overt hypothyroid and 41.6% Subclinical hypothyroidcases. Sumangala Devi [12] found that 6% babies with neonatal jaundice had hypothyroid mothers and rest babies had euthyroid mothers.

Table-4: Neonatal Jaundice and Thyroid Status of Mother

NEONATAL JAUNDICE	EUTHYROID	OVERT HYPOTHYROID	SUBCLINICAL HYPOTHYROID	TOTAL	P value
NO	144(67.6%)	26(68.4%)	87(58.4%)	257	
YES	69(32.4%)	12(31.6%)	62(41.6%)	143	
TOTAL	213(100%)	38(100%)	149(100%)	400	0.039

SPONTANEOUS ABORTION AND ANTI TPO POSITIVITY

In our study there is increased incidence of spontaneous abortion in cases with raised anti TPO antibody (52.40%). Leguene *et al*., [13] found that elevated anti TPO antibody are associated with increased miscarriage rate. Stagnaro Green [14] found anti TPO antibody positive women miscarried at a rate of 17% as compared to 8.4% of anti TPO antibody negative women.

Table-5: Anti TPO Positivity and Spontaneous Abortion

SPONTANEOUS ABORTION	NORMAL(<34UL/ml)	RAISED(≥34UL/ml)		P value
NO	**124(74.70%)**	**10(47.60%)**	**134**	
YES	**42(25.30%)**	**11(52.40%)**	**53**	
TOTAL	**166(100)**	**21(100)**	**187**	**0.009**

ANTI TPO POSITIVITY AND FETAL OUTCOME

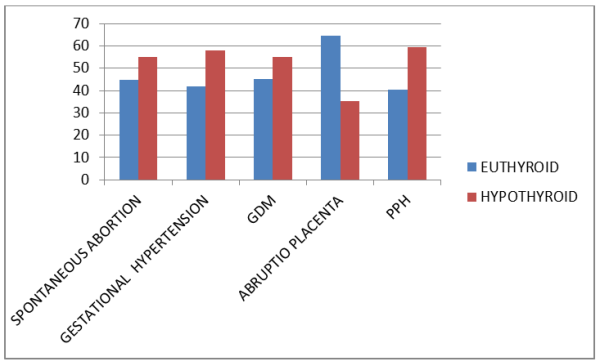
It is seen that those with stillborn (37.5%) have higher anti TPO antibody positivity followed by IUD (30.8%) and liveborn (8.40%)**.** Gupta *et al*., [15] found that patients having anti TPO antibody positive values had increased incidence of IUD (20.43%)

Table-6: Anti TPO Positivity and Fetal Outcome

OUTCOME	ANTI TPO NEGATIVE	ANTI TPO POSITIVE	TOTAL	P value
IUD	**9(69.2%)**	**4(30.80%)**	**13(100%)**	**0.003**
LIVE	**152(91.6%)**	**14(8.40%)**	**166(100%)**	
STILLBORN	**5(62.5%)**	**3(37.5%)**	**8(100%)**	
Total	**166**	**21**		

MATERNAL EFFECTS OF HYPOTHYROIDISM

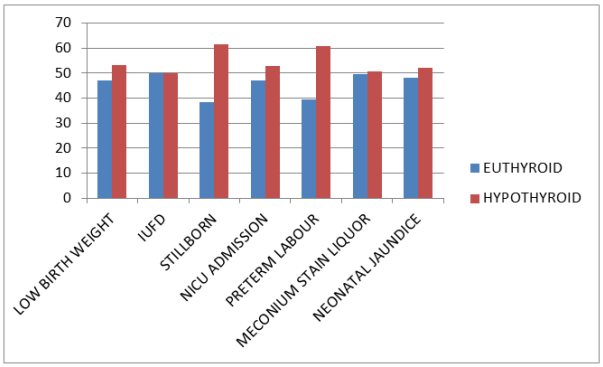
Among hypothyroid cases, 55.2% cases had spontaneous abortion. 58% cases had gestational hypertension. 55% cases had gestational diabetes mellitus. 35.3% cases had abruptio placenta and 59.5% cases had post partum haemorrhage.



Graph-1: Maternal Effects of Hypothyroidism

FETAL EFFECTS OF HYPOTHYROIDISM

Out of hypothyroid cases, 53.1% babies had low birth weight, 50% babies were IUFD, 61.5% babies were Stillborn, 52.9% babies had NICU admission, 60.6% babies had preterm birth, 50.5% babies had meconium stained liquor and 51.7% babies had neonatal jaundice.



Graph 2: Fetaleffects of Hypothyroidism

CONCLUSION AND RECOMMENDATIONS

Our study concludes that

- The prevalence of hypothyroidism in pregnancy is high (46.75%).
- There is significant increase in spontaneous abortion, gestationalhypertension, preterm birth & neonatal jaundice in hypothyroid cases.
- There is increased incidence of spontaneous abortion and still birth in anti TPO antibody positive cases.

Maternal hypothyroidism is a disorder having great potential to adversely affect both the maternal and fetaloutcome. In view of the high prevalence of

hypothyroidism in our study and its association with adverse complications, we recommend routine screening for thyroid dysfunctions in pregnancy.

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