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Original Research Article

Pregnancy Outcome in Women with Hypothyroidism

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ABSTRACT

Objective: The present study was to know the pregnancy outcome in women with hypothyroidism.
Methods: This randomized prospective study was carried out in the department of Obstetrics and Gynecology, Kamla Nehru State Hospital for Mother and Child, Indira Gandhi Medical College, Shimla, Himachal Pradesh, India. A total of 2000 pregnant women underwent thyroid function tests (free T_3, free T_4, and TSH) at their first antenatal visit. Quantitative thyroid hormones were measured by ELISA in serum.
Results: The data was tabulated and statistically analyzed by applying Student t-test and chi-square test to know the incidence of hypothyroidism in pregnant women and correlate the associations between thyroid disorders and various maternal and perinatal outcomes. A total of 2000 consecutive pregnant women attending the antenatal OPD were included in the study. Out of these 254 women were diagnosed to have hypothyroidism (12.7%). Incidence of preterm labor, placental abruption, IUGR was significantly increased in study group.
Conclusion: Systematic screening for hypothyroidism early in pregnancy may be worthwhile and should be commenced at first antenatal visit, preferably in the first trimester. Optimum thyroxine supplementation will obviate many of the maternal and fetal morbidities.

Keywords: Hypothyroidism, free T3, free T4, TSH, Preterm labor

INTRODUCTION

Hypothyroidism is one of the commonest medical disorders encountered during pregnancy. The prevalence of hypothyroidism during pregnancy is reported to be 0.3-0.5% for overt hypothyroidism and 2-3% for subclinical hypothyroidism. [1]

Most common cause of primary hypothyroidism in pregnancy world over is iodine deficiency; chronic autoimmune thyroiditis and ablative therapy are other important causes. Secondary hypothyroidism is of pituitary origin as in Sheehan's syndrome, lymphocytic hypophysitis or a history hypophysectomy. Tertiary hypothyroidism is hypothyroidism of hypothalamic origin. [2] Iodine deficiency is especially endemic in Indian subcontinent and inner Himalayan regions.

Women with hypothyroidism both overt and subclinical are at increased risk of pregnancy related complications such as threatened abortion, preeclampsia, preterm labour, placental abruption, post partum haemorrhage. Fetal complications include low birth weight babies, neonatal hyperbilirubinemia, higher incidence of neonatal hypothyroidism and increased perinatal mortality. [3] Undiagnosed

hypothyroidism in pregnant women may adversely affect the neuropsychological development of the child.

The present study was designed to find out the incidence of hypothyroidism in pregnant women and to determine the effect of hypothyroidism on pregnancy outcome.

MATERIALS & METHODS

This randomized prospective study was carried out in the Department of Obstetrics and Gynecology, Kamla Nehru State Hospital for Mother and Child, Indira Gandhi Medical College, Shimla w.e.f. 01.03.2010 to 28.2.2011.

Study Design

A total of 2000 pregnant women underwent thyroid function tests (free T_3, free T_4 and TSH) at their first antenatal visit.

A detailed obstetric, menstrual, past medical, surgical and family history was taken .A complete general physical, systemic and obstetric examination was done. Gestational age was calculated from the first day of last menstrual period. Routine as well as specialized investigations were done accordingly. These women underwent thyroid function tests (free T_3, freeT_4, TSH) after informed consent. Thyroid function tests were done by taking a venous blood sample (3 ml) in a test tube. Quantitative thyroid hormones were measured by ELISA (Enzyme Linked Immunosorbent Assay) in serum. Those with abnormal tests were put on treatment and thyroid function tests were repeated every 6 weeks during pregnancy and drug dosages were titrated accordingly. Patients were followed up throughout pregnancy and monitored. Details regarding mode of delivery, maternal and fetal outcomes were recorded.

The data was tabulated and statistically analyzed by applying Students t-test and chi-square test to know the incidence of hypothyroidism in pregnant women and co-relate the associations between thyroid disorders and various maternal and perinatal outcomes.

RESULTS

A total of 2000 consecutive pregnant women attending antenatal OPD were included in the study out of which 254 women were diagnosed as hypothyroidism. Incidence of hypothyroidism was 12.7%.

Mean age was 25.9±0.2 for hypothyroid cases and 24.3±0.2 years for euthyroid cases and the difference was statistically significant (p value 0.04). Increased maternal age is associated with increased incidence of hypothyroidism.

The mean BMI was 23.4±2 kg/m2 for hypothyroid cohort and 21.6±2 kg/m2 for euthyroid cohort and the difference was statistically significant (p value 0.01).

Maternal & fetal complications in present pregnancy

Complication	Hypothyroid (254) N(%)		Euthyroid (1746) N(%)		P value
PET	37	9.8%	135	7.7%	0.26
Preterm labour	35	13.77%	107	6.1%	0.001*
IUGR	35	13.77%	88	5.0%	0
Abortion	25	9.8%	47	2.6%	0
Still birth	27	10.6%	51	2.9%	0
Abruption	15	5.9%	37	2.1%	0.001*
GDM	4	1.5%	9	0.5%	0.07
Placenta previa	3	1.1%	11	0.6%	0.40

* - Statistically significant

Neonatal Complications

Complications	Hypothyroid (211) N		Euthyroid (1659)		P-value
Hyperbilirubinemia	33	15.6%	117	7.05%	0.0004*
RDS	27	12.7%	74	4.46%	0
Sepsis	17	8.05%	51	3.07%	0.0012*
Hypoglycemia	6	2.8%	16	0.96%	0.03*
Hypothermia	5	2.3%	12	0.72%	0.03*
Intracranial bleed	4	1.8%	13	0.78%	0.11
Necrotizing enterocolitis	3	1.42%	5	0.30%	0.05*
Early neonatal death	16	7.58%	33	1.98%	0

* - Statistically significant

DISCUSSION

It is best to screen women in early pregnancy for hypothyroidism because thyroid diseases satisfy most of the criteria for a disease to warrant population screening. They are common, treatable and to some extent preventable conditions that produce morbidity, pose special risks for pregnancy and developing fetus. Screening for thyroid dysfunction in a woman who is pregnant or wants to be pregnant is important because thyroid hormone status is directly related to fetal brain development. The purpose of the present study was to find out the incidence of hypothyroidism in antenatal cases and to know its impact on pregnancy outcome.

The incidence of hypothyroidism in the present study was 12.7% which is similar to the study of Molti et al [4] (11.8%) but less than that reported by Casey et al [5] (3.4%). Himachal Pradesh being a hilly state deficient in iodine must be responsible for higher incidence.

The mean BMI was significantly higher in hypothyroid mothers and was comparable to the study conducted by Casey et al [5] and Allan et al. [6]

Hypothyroidism has been associated with poor maternal outcome. Placental abruption was significantly higher in hypothyroid mothers as was documented by Casey et al. [5] Incidence of PET was not significantly higher, as was observed by Sharma et al. [7] Mean gestation at delivery was also comparable in both the groups, so was the incidence of Gestational diabetes. Casey et al reported significantly increased incidence of GDM in hypothyroid cases (9% vs 5%). This could be explained by the fact that the BMI and age of our patients was less as compared to their study.

Fetal outcome was also found to be adversely affected by hypothyroidism. There were 9.8% abortions in hypothyroid cases and 2.6% abortions in euthyroid cases and was comparable to Chen et al. [8] IUGR was seen in 13.77% hypothyroid cases and 5.0% euthyroid cases. This increased incidence of IUGR in hypothyroidism is due to the fact that thyroxine has profound effects on placental integrity and functioning so the deficiency of thyroxine can lead to placental insufficiency. Preterm labor was seen in 13.77% hypothyroid patients and 6.1% of euthyroid cases. It was similar to what was observed by Negro R et al [7] and Casey et al. [5]

Poor Apgar score at birth, stillbirth rate, duration of NICU stay and neonatal mortality was significantly higher in present and Allan et al [9] study.

CONCLUSION

Systematic screening for hypothyroidism early in pregnancy may be worthwhile and should be commenced at first prenatal visit, preferably in the first trimester. Follow up of women with positive screening and their prompt treatment may go a long way resulting in better maternal and fetal outcome. It was inferred that hypothyroidism has profound effects on maternal and fetal wellbeing and thus warranting the early recognition and timely intervention in the form of thyroxine supplementation.

It is important to envisage both the expected changes in thyroid function tests taking place during normal pregnancy and how pregnancy may affect the presentation and course of pre- existing diseases.

Even if the degree of thyroid insufficiency is mild and does not manifest clinically it is important to control it meticulously in order to avoid adverse perinatal outcomes. Optimum thyroxine supplementation will obviate many of the maternal and fetal morbidities so it is important to screen for thyroid dysfunction routinely in all the antenatal women attending clinics.

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