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ORIGINAL RESEARCH ARTICLE

SCREENING OF THYROID DYSFUNCTION IN PREGNANCY

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Abstract: The present study was mainly focussed on following parameters, 1) The thyroid disease burden in pregnant females in our hospital, 2) Types of thyroid disorders in pregnancy, 3) Complications in pregnancy and delivery in those with thyroid dysfunction and 4) Whether routine screening for thyroid disorders in pregnancy is advisable. 300 pregnant women in the first trimester of pregnancy were randomly registered for the study at department of Obstetrics and Gynecology, Govt. Medical College, Hospital, Thrissur, Kerala. After getting ethical clearance and informed consent from patients, data are collected as per proforma and interview of patients in first trimester of pregnancy. Free T4, Free T3 and TSH levels and if necessary, thyroid antibody levels are checked. Patients are followed up till delivery and immediate postpartum period and results are analysed. Prevalence of hypothyroidism was 6.6% and that of hyperthyroidism was 1.6%, in our study. Adverse maternal effects in the hypothyroid group were seen of which preeclampsia was most significant. Adverse fetal outcomes were also noted in the hypothyroid group of which intrauterine growth restriction was significant. The prevalence of thyroid disorders was high in our study. Hence, to avoid the associated maternal and fetal consequences, routine screening of thyroid function in pregnancy is recommended.

Key Words: screening, hypothyroidism, hyperthyroidism, pregnancy, first trimester.

INTRODUCTION

Thyroid diseases have a strong predominance in women of child bearing age. Pregnancy produces an overall increase in thyroid activity, which allows the healthy individual to remain in a net euthyroid state. The prevalence of hypothyroidism is around 5 per 1000 in women and overt hypothyroidism is about 3/1000. The incidence of thyroid disease in pregnancy has been increasing in the last decade. This can have adverse effects on maternal and fetal health. Many of these could be prevented or ameliorated by early detection and appropriate treatment. This will only be possible if we implement screening for thyroid function during pregnancy. Hypothyroidism in pregnant women has been associated with complications like preeclampsia, preterm labour and post-partum haemorrhage. For the babies too there are risks of fetal distress and congenital abnormalities.

Graves hyperthyroidism can lead to miscarriage, abruptio placenta, preterm labour and preeclampsia. Postpartum thyroid dysfunction occurs within the first year after delivery and can manifest as hyper or hypothyroidism.

MATERIALS AND METHODS

They study was conducted in the department of Obstetrics and Gynecology at Govt. Medical College, Thrissur between January 2013 and January 2014. A total of 300 patients from antenatal clinics were included. It was a prospective study. All healthy pregnant women with no other medical disorders and singleton pregnancies were included. Those with documented thyroid disorders, medical disorders or hyperemesis were excluded. After detailed history and examination, free T3, free T4 and TSH estimation were done in the first trimester, for all these patients, using the ELISA method. Those with abnormal thyroid function were made to undergo thyroid antibody testing, were treated and followed up till termination of pregnancy. For those with abnormal thyroid function, tests were repeated 6 weekly and drug doses titrated accordingly. They were followed up throughout pregnancy.

Maternal outcome was noted in terms of preeclampsia, abruptio placenta, anemia, gestational diabetes, incidence of caesarean section and post-partum haemorrhage. The fetal outcome was noted in terms of birth weight, Apgar score at one minute, neonatal intensive care unit admission, preterm delivery, intrauterine growth restriction (IUGR), fetal distress and intrauterine demise. Neonatal outcomes were noted in terms of hyper bilirubinemia, respiratory distress, sepsis, hypoglycemia, hypothermia, intracranial bleed, necrotizing enterocolitis and early neonatal death. Neonatal thyroid function estimation was also done.

RESULTS

The patients were divided into five groups according to the thyroid function test results.

Group I: Euthyroid, defined as normal TSH.
Group II: Subclinical hypothyroidism, defined as high TSH, in presence of normal levels of free T4.

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Group III: Overt hypothyroidism, defined as high TSH with low free T4.
Group IV: Overt hyperthyroidism defined as low TSH with raised free T4.
Group V: Subclinical hyperthyroidism, defined as low TSH with normal free T4.

Out of 300 patients, 25 (8%) had deranged thyroid function. Prevalence of hypothyroidism was 20 (6.6%) out of which 10 had overt hypothyroidism and 10 had subclinical hypothyroidism. One case of thyroid follicular carcinoma was detected in a case with overt hypothyroidism.

The prevalence of hyperthyroidism was 5 (1.6%) out of which all 5 were overt hyperthyroid. Anti – TPO (Thyroid peroxidase) and ATA (Thyroglobulin antibody) were done in patients with deranged TSH levels.

Anti-TPO antibody was found positive in 10 of the hypothyroid patients. (4 overt and 6 subclinical). ATA was positive in 5 hypothyroid patients (3 subclinical and 2 overt). Both were raised in three cases of hypothyroidism (2 subclinical and 1 overt). Thyroid antibodies were found negative in all 5 cases of hyperthyroidism.

Euthyroid (275)
Subclinical hypothyroidism (10)
Overt hypothyroidism (10)
Overt hyperthyroidism (5)

Adverse maternal Effects

Adverse maternal effects in the hypothyroidism group which were significant, was preeclampsia.

	I (275)	II (10)	III (10)	IV (5)
Preeclampsia	15 (5.45%)	3 (30%)*	2 (10%)	–
Abruptio placenta	6 (2.18%)	0	1 (10%)	–
Anemia	15 (5.45%)	0	1 (10%)	–
Gestational diabetes	37 (13.45%)	1	2 (20%)	–
Postpartum haemorrhage	13 (4.73%)	0	1 (10%)	–

P<0.009 (Gr I Vs GrII)

Mode of Delivery

Regarding mode of delivery in the different groups, LSCS for fetal distress was done in 3 out of the total 10 cases of subclinical hypothyroidism, which was significant.

	I	II	III	IV
LSCS	86 (31:27%)	6(60%)	3(10%)	–
LSCS for fetal distress	10 (3.64%)	3(30%)*	1(10%)	–
Instrumental delivery	18 (6.55%)	2(20%)	0	–
Normal vaginal	163	2(20%)	7	5

P<0.002 (Gr I Vs GrII)

Fetal Outcomes

In the fetal outcome adverse outcomes in overt hypothyroidism included 2 preterm births, 3 cases of IUGR (which was significant statistically), 2 cases of LBW (low birth weight) and 2 cases of abortions. In the subclinical hypothyroidism group, there were 3 preterm births, 3 cases of IUGR, 1 case of LBW, 1 abortion and 1 still birth. No adverse outcomes were seen in the cases of hyperthyroidism.

	I (275)	II (10)	III (10)	IV (5)
Preterm	57 (20.7%)	2(20%)	3(310%)	0
IUGR	15 (5.45%)	3 (30%)*	3 (30%)	0
LBW	20 (7.27%)	2 (20%)	1(10%)	0
Abortion	8(2.91%)	2(20%)	1(10%)	0
Stillbirth	2 (0.73%)	0	1(10%)	0

P<0.029 (Gr I Vs GrII)

Neonatal Outcomes

There were 3 cases of hyperthermia in the subclinical hypothyroid group, which was statistically significant. 1 case of RDS (Respiratory distress syndrome), 2 cases of low Apgar. In overt hypothyroid cases, there were 2 hyperthermia cases, 3 cases with low Apgar and 1 case of neonatal sepsis.

	I	II	III	IV
Hyperthermia	10 (3.64%)	3 (30%)*	2 (20%)	0
RDS	8 (2.9%)	1 (10%)	0	0
Sepsis	7 (2.54%)	0	1(10%)	0
Low Apgar score	32 (11.6%)	2 (20%)	3 (30%)	0

P<0.003 (Gr I Vs GrII)

DISCUSSION

Assessment of thyroid function during pregnancy should be done with a careful clinical evaluation of the patients symptoms and measurement of TSH and free thyroid hormones. Measurement of thyroid autoantibodies may be useful in selected cases to detect Graves disease or Hashimoto's thyroiditis. Various studies have shown that targeted thyroid function testing would miss about 1/3 of pregnant women with overt/subclinical hypothyroidism. Thus it is best to screen for thyroid dysfunction early in the pregnancy and treatment started at the earliest.

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