HYPOTHYROIDISM IN PREGNANCY AND ITS EFFECT ON MATERNAL AND FOETAL OUTCOME

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ABSTRACT

Present study aims to know the hypothyroidism in pregnancy and its effect on maternal and foetal outcome. The clinical material for this study was taken from the department of obstetrics and gynecology, Bowring and lady Curzon hospital, Bangalore medical college and research institute, Bangalore. The study period was from Jan 2012 to June 2014. During this period, 490 patients were admitted for delivery. The presentation of hypothyroidism in pregnancy is not always classical and may sometimes be difficult to distinguish from the symptoms of normal pregnancy. A high index of suspicion is therefore required especially in women at risk of thyroid disease e.g. women with a personal or family history of thyroid disease, goitre, or co-existing primary autoimmune disorder like type 1 diabetes. Several studies, mostly retrospective, have shown an association between overt hypothyroidism and adverse fetal and obstetric outcomes. Based on current literature, thyroid testing in pregnancy should be performed on symptomatic women and those with a personal history of thyroid disease or other medical conditions associated with thyroid disease (eg, diabetes mellitus). Hypothyroidism is quite common during pregnancy and it should be included in routine antenatal tests.

KEYWORDS: Hypothyroidism, Pregnancy, Autoimmune Disorder, Thyroid Testing

INTRODUCTION

Whenever a woman finds out that she is pregnant, she and her partner naturally desire the pregnancy to be a successful one, and for the child to be as healthy as possible. In most cases, everything that can be done to assure a good outcome will be done, including regular doctor visits, good nutrition, avoidance of alcohol, tobacco, and unnecessary medications, and screening for diabetes and other diseases that could affect the baby’s health. Until recently, checking routinely (screening) for possible thyroid problems was not considered important in pregnant women, unless they had the typical symptoms of hypothyroidism or hyperthyroidism.

The reason that doctors haven’t been screening for thyroid problems in pregnant women stems from old research studies that concluded that thyroid hormone from the mother did not cross the placenta in amounts that were large enough to have any effect on the baby. Consequently, it was also thought that whether a woman’s thyroid was functioning normally or not would have little impact on the baby’s development. Studies done in the 1960s did suggest the possibility that women who were hypothyroid might have a higher chance of giving birth to children whose IQ was lower than children of women with normal thyroid function. However, these observations were dismissed by many skeptics, because thyroid function in pregnant women was difficult to measure back in those days, and because of the It is now known that some thyroid hormone does cross the placenta. Furthermore, even the small amount of maternal hormone that gets through to the developing fetus is probably important, especially during the first trimester, before the fetus has developed its own
thyroid gland. In fact, it is during this crucial 12-week period that the baby’s brain starts to develop. Prevailing thought that thyroid hormone didn’t cross the placenta to any significant degree.

Many study found that, on average, the children born to the hypothyroid mothers performed less well on a variety of tests of intellectual function, and had an average IQ that was 7 points lower than that of the control children. The authors concluded that "systematic screening for hypothyroidism early in pregnancy may be worthwhile “the present study aims to know the hypothyroidism in pregnancy and its effect on maternal and foetal outcome

MATERIALS AND METHODS

The clinical material for this study was taken from the department of obstetrics and gynecology, Bowring and lady Curzon hospital, Bangalore medical college and research institute, Bangalore. The study period was from Jan 2012 to June 2014. During this period, 490 patients were admitted for delivery. Out of them, there were 108 patients of pregnancy related hypothyroidism. 100 patients were taken for the study after satisfying the inclusion and exclusion criteria.Inclusion criteria were all pregnant women with hypothyroidism detected in present pregnancy or earlier and are biochemically euthyroid or hypothyroid. Exclusion criteria include women with multiple pregnancy, overt diabetes, history of thyroid surgery or hyperthyroid on treatment. Pregnant women with hypothyroidism admitted in antenatal ward were followed up till delivery. All patients’ details were collected in a structured questionnaire, after getting their consent. Age, parity, socioeconomic status, BMI were noted. The cases were booked if they had at least three antenatal visits. Past obstetric history, family history of thyroid disease was noted. Details of current pregnancy were noted including duration of pregnancy, history of gestational hypertension, preeclampsia, PPROM, abruption, placenta previa, Routine investigations was done in all patients. Special investigations like TFT, fasting lipid profile was done, presence of anaemia, type of anaemia is specially looked for and details regarding treatment including parenteral iron or blood transfusion were also noted. Treatment details such as initial dose of thyroxin, whether dose increased during present pregnancy,, history of discontinuation of treatment, thyroid status at the time of delivery were noted. The patients were followed up till delivery, gestational age at delivery, mode of delivery, indication for caesarian section, maternal complications were noted. After delivery neonatal examination was done to determine the APGAR score, gestational age, birth weight, IUGR, congenital anomalies. Perinatal outcome was measured in terms of number of babies admitted to neonatal intensive care unit, the number of days of admission to NICU, and the final outcome of the babies, in terms of whether discharged in good condition or expired during the neonatal period. According to the Guidelines, if a laboratory has not established its own trimester-specific reference ranges for TSH, the following reference ranges should be used; First trimester : 0.1-2.5 mIU/L, Second trimester : 0.2-3.0 mIU/ and Third trimester : 0.3-3.0 mIU/L.

<table>
<thead>
<tr>
<th>Reference Range</th>
<th>Non Pregnant Adult</th>
<th>1st Trimester</th>
<th>2nd Trimester</th>
<th>3rd Trimester</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSH(megIU/Ml)(3,4,5)</td>
<td>0.3-4.25</td>
<td>0.60-3.40</td>
<td>0.37-3.60</td>
<td>0.38-4.04</td>
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<tr>
<td>Thyroxine binding Globulin(mg/dl)</td>
<td>1.3-3.0</td>
<td>1.9-3.2</td>
<td>2.8-4.0</td>
<td>2.6-4.2</td>
</tr>
<tr>
<td>Thyroxine, free(T4)(ng/dl)(4,5)</td>
<td>0.8-1.7</td>
<td>0.8-1.2</td>
<td>0.6-1.0</td>
<td>0.6-1.0</td>
</tr>
<tr>
<td>Thyroxine, Total(T4)(meg/dl)(3,4)</td>
<td>5.4-11.7</td>
<td>6.5-10.1</td>
<td>7.5-10.3</td>
<td>6.3-9.7</td>
</tr>
<tr>
<td>FreeT3(T3)(pg/ml)5</td>
<td>2.4-4.2</td>
<td>4.1-4.4</td>
<td>4.0-4.2</td>
<td>Not reported</td>
</tr>
<tr>
<td>Total T3 (ng/dl)4</td>
<td>77-135</td>
<td>97-149</td>
<td>117-169</td>
<td>123-162</td>
</tr>
</tbody>
</table>
Hypothyroidism in Pregnancy and its Effect
On Maternal and Foetal Outcome

RESULTS

![Figure 1: Status of Gravida](image1)

![Figure 2: Indication of CS](image2)

DISCUSSIONS

Hypothyroidism is common in pregnancy with an estimated prevalence of 2-3% and 0.3-0.5% for subclinical and overt hypothyroidism respectively. (2) Endemic iodine deficiency accounts for most hypothyroidism in pregnant women worldwide while chronic autoimmune thyroiditis is the most common cause of hypothyroidism in iodine sufficient parts of the world. (3) The presentation of hypothyroidism in pregnancy is not always classical and may sometimes be difficult to distinguish from the symptoms of normal pregnancy. A high index of suspicion is therefore required especially in women at risk of thyroid disease e.g. women with a personal or family history of thyroid disease, goitre, or co-existing primary autoimmune disorder like type 1 diabetes. Several studies, mostly retrospective, have shown an association between overt hypothyroidism and adverse fetal and obstetric outcomes (e.g. Glinoer 1991). (4) Maternal complications such as miscarriages, anaemia in pregnancy, pre-eclampsia, abruptio placenta and postpartum hemorrhage can occur in pregnant women with overt hypothyroidism. Also, the offspring of these mothers can have complications such as premature birth, low birth weight and increased neonatal respiratory distress. (5) Similar complications have been reported in mothers with subclinical hypothyroidism. A three-fold risk of placental abruption and a two-fold risk of pre-term delivery were reported.
in mothers with subclinical hypothyroidism. (6) Another study showed a higher prevalence of subclinical hypothyroidism in women with pre-term delivery (before 32 weeks) compared to matched controls delivering at term. (7) An association with adverse obstetric outcome has also been demonstrated in pregnant women with thyroid autoimmunity independent of thyroid function. Treatment of hypothyroidism reduces the risks of these adverse obstetric and fetal outcomes; a retrospective study of 150 pregnancies showed that treatment of hypothyroidism led to reduced rates of abortion and premature delivery. Also, a prospective intervention trial study showed that treatment of euthyroid antibody positive pregnant women led to fewer rates of miscarriage than non treated controls.

CONCLUSIONS

Based on current literature, thyroid testing in pregnancy should be performed on symptomatic women and those with a personal history of thyroid disease or other medical conditions associated with thyroid disease (eg, diabetes mellitus). Hypothyroidism is quite common during pregnancy and it should be included in routine antenatal tests.

REFERENCES