



Screening for Thyroid Diseases in Urban Pregnant Women

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Abstract: Thyroid hormones play major roles in the regulation of a wide range of metabolic and physiologic processes, but the genes and environmental factors that affect normal concentrations is largely unknown using quantitative genetic methods. Thyroid hormone is critical to normal development of the baby's brain and nervous system. In investigations to study of complete thyroid profile of all antenatal patients was done at the first antenatal visit along with routine tests. The Aim of the present study was to Screening for Thyroid Diseases in Urban Pregnant Women. A total of 200 pregnant women were included in this study. The Results showed 34% prevalence of hypothyroidism of which 30% being subclinical hypothyroidism and 4% overt hypothyroidism. There was 9.5% prevalence of hyperthyroidism of which 5.5% being subclinical hyperthyroidism and 4% overt hyperthyroidism. It shows a very high prevalence rate of hypothyroidism in the patients attending the antenatal outpatient department of Govt. Hospital, Samastipur, Bihar. This justifies the inclusion of thyroid profile test as a routine test in the antenatal profile.

Keywords: Pregnancy, Hypothyroidism, Subclinical hypothyroidism

I. INTRODUCTION

Uncontrolled thyrotoxicosis and hypothyroidism are associated with adverse pregnancy outcomes. Correspondingly, there is concern about the effect of overt (i.e., symptomatic) maternal thyroid disease and even subclinical maternal thyroid disease on fetal development. In addition, medications that affect the maternal thyroid gland can cross the placenta and affect the fetal thyroid gland [1]. Only recently has a TSH of 2.5 mIU/L been accepted as the upper limit of normal for TSH in the first trimester. Although it is well accepted that overt hypothyroidism and overt hyperthyroidism have a deleterious impact on pregnancy, studies are now focusing on the potential impact of subclinical hypothyroidism and subclinical hyperthyroidism on maternal and fetal health, the association between miscarriage and preterm delivery in euthyroid women positive for TPO and/or Tg antibody, and the prevalence and long-term impact of postpartum thyroiditis [2]. While a strong body of research points to a clear relationship between overt thyroid disease and pregnancy complications-including miscarriage, pre-eclampsia, anemia, placental abruption, and postpartum hemorrhage-evidence about the effects of subclinical thyroid disease, especially hypothyroidism, is less clear [3]. Though universal screening for thyroid dysfunction in pregnancy increases the number of women diagnosed with hypothyroidism who can be subsequently treated, it does not clearly impact maternal and fetal outcomes [4]. All pregnant women should ingest approximately 250 μ g iodine daily. There is no need to initiate iodine supplementation in pregnant women who are being treated for hyperthyroidism or who are taking LT4. Euthyroid pregnant women who are TPOAb or TgAb positive should have measurement of serum TSH concentration performed at time of pregnancy confirmation and every 4 weeks through midpregnancy. Evaluation of serum TSH concentration is recommended for all women seeking care for infertility. LT4 treatment is recommended for infertile women with overt hypothyroidism who desire pregnancy [5].

The fetal thyroid gland begins synthesizing thyroid hormone after 12 weeks of gestation. Thyroid hormone is supplied to the fetus by the mother before this time, and it is at this time that thyroid hormones are most important for fetal brain development. However significant fetal brain development continues beyond first trimester, making thyroid hormone also important in later gestation. Women with overt hypothyroidism are at an increased risk for pregnancy complications such as early pregnancy failure, preeclampsia, placental abruption, low birth weight and still birth. Treatment of women with overt hypothyroidism has been associated with improved pregnancy outcomes [6].

Overt hypothyroidism in pregnancy, defined as an elevated serum thyroid-stimulating hormone (TSH) and reduced serum free thyroxin or a TSH >10 mIU/L, is known to have adverse effects on pregnancy. Subclinical hypothyroidism is typically defined as an elevated TSH and normal FT4 levels [7]. Treatment is necessary when TSH is 10 or more, regardless of the T4 level. In addition, TSH should be monitored every 4 weeks during the first 20 weeks of gestation, then once again between 26 and 32 weeks [8].

**II. MATERIAL AND METHODS**

This is an observational retrospective study. The cases of this study were recruited from the biochemistry department where samples are received from outpatient Department of Obstetrics and Gynecology, Government Hospital, Samastipur, Bihar in the month of April 2021. Serum TSH is the most convenient and best test to diagnose thyroid disease in pregnancy in first trimester.

The new recommendations for TSH levels during pregnancy are the following

- First trimester: less than 2.5 with a range of 0.1-2.5
- Second trimester: 0.2-3.0
- Third trimester: 0.3-3.0.

Exclusion criteria

- Pregnant women with pre-existing medical disorders like diabetes, heart disease, collagen disease etc.
- Women taking drugs known to alter thyroid level (e.g. amphetamines, dopamine agonist, amiodarone, steroids).

III. RESULTS AND DISCUSSION**Table 1: Age group.**

Age Group (in Years)	No. of Patients	%
21-25	52	26
26-30	106	53
31-35	40	20
36-40	2	1

Table 2: Parity

Parity	No. of Patients	%
Primigravida	142	71
Multigravida	58	29

Table 3: BMI (Body Mass Index)

BMI	No. of Patients	%
<17.9 kg/m ₂ underweight	3	1.5
18-22.9 kg/m ₂ normal	160	80
>23 kg/m ₂ overweigh	34	17
>25 kg/m ₂ obesity	3	1.5

Table 4: Overt and subclinical hypothyroidism

Hypothyroidism	No. of Patients	%
Over Hypothyroidism	8	4
Subclinical Hypothyroidism	60	30
Total	68	34

Table 5: Overt and subclinical hyperthyroidism

Hyperthyroidism	No. of Patients	%
Over Hyperthyroidism	8	4
Subclinical Hyperthyroidism	11	5.5
Total	19	9.5



In current study, 53% patients were in the age group 26-30 years, 26% patients were in the age group 21-25 years, 20% patients were in the age group 31-35 years while 1% patients were in the age group 36-40 years. 71% of the patients were primigravida and 29% of the patients were multigravida. In present study, 80% girls had normal BMI, 17% were overweight, and 1.5% was obesity while 1.5% was underweight. Total prevalence of hypothyroidism was 34%. Out of this, overt hypothyroidism was seen in 4% of patients whereas subclinical hypothyroidism was seen in 30% of patients. Green A et al found that overt hypothyroidism affects up to 1% of all pregnancies. But subclinical hypothyroidism affects between 3% and 15% of pregnancies [2]. Levenson D et al found that thyroid disease affects approximately 5% of U. S. women of reproductive age and has been associated with complications in pregnant women and their children [3]. The debate began with a 1999 study that found children ages 7 to 9 born to women with undetected thyroid deficiency had IQ scores that averaged 7 points lower than IQ scores of children of treated control subjects [3].

According to Patibandla R found that out of 1062 cases, 149 (14.03%) cases demonstrated subclinical hypothyroidism, 66 cases (6.2%) had overt hypothyroidism and 7 cases (0.6%) had hyperthyroidism. They found that 70% subclinical hypothyroidism and 30% overt hypothyroidism out of total hypothyroid cases. The results showed 20.1% prevalence, 14.03% being subclinical hypothyroidism and 6.6% overt hypothyroidism. The upper limit of TSH is taken as 2.5 mIU/L in 1st trimester and 3mIU/L in 2nd and 3rd trimester [6].

According to ACOG, the prevalence of subclinical hypothyroidism has been anticipated to be between 2% and 5% [6]. Cignini P et al found that hypothyroidism occurs in 2.5% of pregnancies; however, the frequency of OH is estimated to be between 0.2 and 1.0% [7]. They found that prevalence of SH varies between 1.5 and 4.0% [9].

In present study, total prevalence of hyperthyroidism was 9.5%. Out of this, overt hyperthyroidism was seen in 4% of patients whereas subclinical hypothyroidism was seen in 5.5% of patients. Cignini P et al found that hyperthyroidism occurs in 0.1-0.4% of pregnant women. Whereas about 2-3% of pregnant women are hypothyroid, of whom 0.3-0.5% have overt hypothyroidism and 2-2.5% present subclinical hypothyroidism [9]. They found hyperthyroidism as less common than hypothyro Mestman N found that hyperthyroidism occurs in 0.1-0.4% of pregnant women. Whereas about 2-3% of pregnant women are hypothyroid, of whom 0.3-0.5% have overt hypothyroidism and 2-2.5% present subclinical hypothyroidism [10]. Taylor P et al studied 13,224 pregnant women; 12,608 had normal thyroid function, 340 had subclinical hypothyroidism (SCH), 305 had isolated hypothyroxinemia (IH). 10 treatments had no discernible effect on the composite outcome. Both SCH and IH were associated with key adverse obstetric outcomes. Although there was no difference in composite outcome there were some benefits observed with levothyroxine therapy [11]. A study showed prevalence of hypothyroidism was 6.3%. and the prevalence of hypothyroidism in pregnancy - 3.7% [12]. They found that age of hypothyroid pregnant women varied from 20-35 years, with median age of 25 years [13].

CONCLUSION

The study shows a very high prevalence rate of hypothyroidism compared with the prevalence of hyperthyroidism in the patients attending the antenatal outpatient department. This justifies the inclusion of thyroid profile test as a routine test in the antenatal profile.

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