

Study of Prevalence of Hypothyroidism in PregnancyWinnie Nimma¹, Bashetty Ravi², Kashavoina Dayakar³, Srikar Gattu⁴¹Assistant Professor, Department of Obstetrics and Gynaecology, Government Medical College, Nirmal, Telangana²Assistant Professor, Department of General Medicine, Government Medical College, Nirmal, Telangana³Assistant Professor, Department of General Medicine, Government Medical College, Nirmal, Telangana⁴Assistant Professor, Department of General Medicine, Government Medical College, Nirmal, Telangana

Received: 15-10-2024 / Revised: 23-10-2024 / Accepted: 06-11-2024

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Conflict of interest: Nil

Abstract:

Thyroid hormones of the fetus exclusively comes from mothers in early pregnancy, indicating that maternal hypothyroidism has a close-knit relationship with fetal growth and neuropsychological development. Hypothyroidism is one of the most common endocrinopathies during pregnancy. During early pregnancy the foetus is totally dependent on maternal thyroid hormone supply. Thyroid hormone is critical for foetal brain and intellectual development and some preventable conditions like abruption, pre-eclampsia etc. which produce morbidity and pose special risk for pregnancy and the developing foetus. A total 50 cases were included in the study. The age ranged from 18 to 40 years. Serum TSH value was tested in 1st trimester between 6-10 weeks period of gestation for all pregnant women. The estimation of free T4 levels was done to reclassify those with thyroid dysfunction as subclinical or overt hypothyroidism. The overall prevalence of hypothyroidism in pregnancy is quite high (18%), 12% were having Subclinical Hypothyroidism and 06% had Overt Hypothyroidism.

Key words : Hypothyroidism, Pregnancy.

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Introduction

Pregnancy has a significant effect on the thyroid gland and its functioning [1]. Hypothyroidism in pregnancy is defined as an increased TSH level in serum. Furthermore, based on free T4 levels, it is categorized into overt (lower free T4 levels) and subclinical hypothyroidism (normal free T4 levels) [2]. Worldwide, several studies have reported 1.5%-4% prevalence of hypothyroidism in pregnant women. Among them, 0.3% to 0.5% had overt hypothyroidism (OH), and the rest had subclinical hypothyroidism (SCH) [3-5]. In India, reports on the prevalence of maternal hypothyroidism ranged between 1.2% and 67.0% in various studies [6,7]. Function of the thyroid gland is affected by pregnancy is associated with maternal/fetal health [8]. In the first trimester of pregnancy, human chorionic gonadotropin (hCG) stimulates a transient elevation in maternal serum concentration of free thyroxine (fT4), which is reflected by a decrease in levels of thyroid stimulating hormone (TSH); during this trimester, maternal serum TSH concentrations are significantly lower than pre-conception levels. Following, serum levels of fT4 decrease by 10%, and maternal level of TSH gradually increases to normal values. In addition, mid-gestation rise in serum concentrations of thyroxine binding globulin

(TBG) leads to significant increase in both total thyroxine (T4) and triiodothyronine (T3) in the second and third trimesters of pregnancy [9-11]. In this context daily iodide consumption increased along with a reduction in TSH levels [12] and immunosuppression inherent throughout pregnancy, leads to decrease in level of maternal thyroid autoantibodies levels [13]. Hypothyroidism is one of the most common endocrinopathies during pregnancy [14]. Emerging evidence suggests that maternal hypothyroidism is associated with adverse maternal, fetal and obstetrical outcomes, including preeclampsia, gestational hypertension, low birth weight, abortion, and premature delivery [15,16].

Thyroid dysfunction during pregnancy is associated with adverse maternal complications like miscarriages, anaemia complicating pregnancy, pre-eclampsia, abruptio-placentae, postpartum haemorrhage and foetal complications like premature birth, low birth weight, increased neonatal respiratory distress. Maternal and foetal hypothyroidism can also result in irreversible brain damage with mental retardation and neurologic abnormalities which justifies screening for thyroid dysfunction during early pregnancy with

interventional levothyroxine therapy for thyroid hypofunction. [17-22] Pregnancy results in a number of important physiological and hormonal changes that alter thyroid function mainly due to the influence of two main hormone; human chorionic gonadotropin (HCG) and estrogen. [23] Thyroid dysfunction is often overlooked in pregnancy because of the non-specific symptoms and the hyper metabolic state of pregnancy. [24] The prevalence reports of hypothyroidism during pregnancy in India, a country considered to be a relative moderate iodine deficiency, ranges from 4.8% to 11%.8 The prevalence of OH and SCH complicating pregnancy has been reported 3% and 9%, respectively.9 There are few published Indian studies on this topic. Therefore, this study was conducted with sincere effort to throw some light on this topic.

Material and Methods

This study was conducted in OBGY and Medicine department of tertiary care medical college and hospital A total 50 cases were included in the study. The age ranged from 18 to 40 years . Serum TSH value was tested in 1st trimester between 6-10

weeks period of gestation for all pregnant women. The estimation of free T4 levels was done to reclassify those with thyroid dysfunction as subclinical or overt hypothyroidism.

Inclusion Criteria

- Primi and multigravida belonging to any age group
- Singleton pregnancy
- Patients in the first trimester

Exclusion Criteria

- Patients with pre-gestational hypothyroidism.
- Multiple pregnancy
- Gestational trophoblastic disease.
- Hyperthyroid Women

All subjects enrolled in the study as per the inclusion criteria will be subjected to a detailed history and clinical examination using a predesigned proforma.

Results

76 % of Pregnant women were in age group of 20-30 years.

Table 1: Age groups of Pregnant women

Age groups(years)	Frequency n=50	Percentage
<20	05	10 %
20-30	38	76 %
31-40	07	14 %

Table 2: Thyroid dysfunction in pregnant women

Thyroid dysfunction	TSH (mlU/L)	F T4(mcg/dl)
Euthyroid	0.4-3.5	Normal
Subclinical Hypothyroidism	>3.5	Normal
Overt Hypothyroidism	>3.5	Decreased

Table 3: Types of Hypothyroidism

Thyroid dysfunction	Frequency n=50	Percentage
Euthyroid	41	82 %
Subclinical Hypothyroidism	06	12 %
Overt Hypothyroidism	03	6 %

Table 3 shows 82 % pregnant women were Euthyroid. 12% were having Subclinical Hypothyroidism and 06% had Overt Hypothyroidism.

Discussion

Pregnancy is a physiological state of complex metabolic stress that involves significant changes in hormonal milieu. It has a profound influence on thyroid gland structure as well as function. Hypothyroidism during pregnancy constitutes a significant health challenge, as it is associated with adverse maternal outcome along with an impact on neonatal cognitive development. The foetal thyroid gland starts to function only after 12-14 weeks of

gestation. As a consequence, the growing foetus remains dependent upon maternal thyroid hormones during this phase of early gestation.[1,2] Thyroid hormones (thyroxine and triiodothyronine) are vital for normal foetal neurological development[3,4] and decreased levels predispose the child to develop cognitive delay in early adolescence.5 The prevalence of hypothyroidism during pregnancy is variable, and this variability is mostly attributed to differences in geographical areas, analytical measurement and trimester-specific TSH limits used in diagnosis. The prevalence of Hypothyroidism in the present study was 18%, with sub-clinical hypothyroidism constituting 12% and overt hypothyroidism

accounting for 06%. The prevalence of hypothyroidism in the present study was comparable to the study by Sahu et al who reported a prevalence of hypothyroidism of 12.7% with overt and subclinical hypothyroidism to be 4.58% and 6.47%.[25] Dhanwal et al from Delhi in 2013 reported a prevalence of hypothyroidism as 14.3%, with sub-clinical hypothyroidism constituting 9% and overt hypothyroidism constituting 3%.[26] Ajmani et al also observed a prevalence of hypothyroidism of 13.5% with subclinical and overt hypothyroidism accounting for 9% and 3% respectively, which was comparable to present study.[27] A study done in 2011 by Wang et al noted a prevalence of thyroid dysfunction of 10.2%, with subclinical hypothyroidism being 7.2% and that of overt hypothyroidism accounting for 0.3%.[28,29] In the present study, the prevalence of hypothyroidism was 18%. In the study done by Pillai NS et al.[30] the prevalence of thyroid dysfunction was 10.8%, whereas, Agrawal U et al.[31] observed the prevalence of hypothyroidism in pregnancy around 2.5% and Dhanwal DK et al.[32] reported the prevalence of hypothyroidism as 15.1% in first trimester. In the study by Goel P et al.[33] the overall prevalence of hypothyroidism was 6.3% (overt 2.9% and subclinical 3.4%) in pregnancy. The prevalence of hypothyroidism was comparable to the other studies.

Conclusion

The overall prevalence of hypothyroidism in pregnancy is quite high (18%), 12% were having Subclinical Hypothyroidism and 06% had Overt Hypothyroidism. Early detection, prompt initiation of treatment and adequate follow-up of hypothyroidism in pregnancy is very important for the fetal and maternal well being.

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