

Frequency of Thyroid Dysfunction in Pregnant Women Visiting Outpatient Department of a Tertiary Care Hospital of South Punjab

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ABSTRACT

Objective: To determine the frequency of thyroid dysfunction in pregnant healthy woman.

Study Design: Cross sectional study.

Place and Duration of Study: This study was conducted at the out-patient Department of Gynecology and Obstetrics, Nishtar Hospital, Multan from May 2015 to May 2016

Materials and Methods: Four hundred fifty-one healthy pregnant women visiting out-patient department of Gynecology and Obstetrics were included in this study and serum TSH test was done in all patients enrolled in study. The patients with deranged TSH test were further assessed by free T3 and T4 levels from central lab Nishtar hospital Multan. All the data was entered and analyzed by using SPSS v-20.

Results: Our study included a total of 451 healthy pregnant ladies who met inclusion criteria of our study. Mean age of our study cases was noted to be 27.87 ± 4.76 years while majority of our study cases i.e. 289 (64.1%) belonged to age group ranging from 20 - 30 Years. Mean Parity of our study cases was 2.88 ± 0.99 , our study results have shown that majority of our study cases i.e. 325 (72.1%) had parity equal or less than 3. Mean gravidity was 3.96 ± 0.95 and majority of these ladies i.e. 307 (68.1%) had parity ranging from 1 – 4. Mean gestational age of our study cases was 20.25 ± 4.30 weeks (range 13 – 26 weeks). Euthyroid was seen in 303 (67.2 %) of our study cases, of the remaining 148 (32.8%) having thyroid dysfunction, subclinical hypothyroidism was seen in 94 (20.8 %) and subclinical hyperthyroidism was seen in 54 (12.0%) of our study cases.

Conclusion: High frequency of thyroid dysfunction was noted in our study. Subclinical hypothyroid was significantly associated with increasing age, parity more than 3 and gestational age. Subclinical hyperthyroid was also significantly associated with age. Our study results suggest that all pregnant ladies should be screened for these thyroid hormones to overcome these related adverse outcomes. This will help to decrease disease morbidity and improve quality of life of our patients.

Key Words: Thyroid dysfunction, Subclinical hypothyroid, euthyroid

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INTRODUCTION

Derangement in thyroid hormone levels is a common entity, encountered by Gynecologists, among pregnant women and it may affect perinatal outcomes both in mothers and their fetus. Thyroid function regulation is significantly modified during course of pregnancy and these modifications are often caused by different factors like increase in thyroxine – binding globulin (TBG) after elevation in the levels of estrogens and human chorionic gonadotropin (hCG), loss of Iodine as a result of enhanced glomerular filtration rates (GFR) increased

renal losses of iodine due to increased glomerular filtration rate and due to modified placental iodine transfer.¹ Thyroid glands can enlarge upto 10 % during pregnancy in Iodine source sufficient countries while it may enlarge to greater extent among countries where iodine source is insufficient. During pregnancy, Iodine requirement as well as thyroid hormone production may increase about 50% and pregnancy is referred to be the stress test for thyroid functioning which results in hypothyroidism among pregnant ladies having low thyroidal reserves or who have iodine insufficiency². About 0.1 – 0.4 % of pregnant ladies may have hyperthyroidism while hypothyroidism may occur in 2–3% of pregnant ladies (in which around 0.5% have overt hypothyroidism and 2–2.5% exhibit subclinical hypothyroidism).³ During pregnancy estimated 5 – 10% of the women are found positive for thyroid antibodies, so they have more risk for the development of varying degree of thyroid deficiency⁴. Maternal hypothyroidism, thyrotoxicosis and recurrent postpartum thyroiditis are most commonly encountered

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entities during pregnancy and immediately after birth⁵. Autoimmune Hashimoto's thyroiditis is believed to be major cause of hypothyroidism in pregnant women in iodine source limited regions while iodine deficiency remains commonest cause of the goiter in such areas⁶. A local study carried out in Lahore, Pakistan revealed that about 79.8% of the pregnant mothers are found to be iodine deficient, out of which 24.7% are moderately deficient in iodine which predisposes the mothers and their neonates to develop iodine deficiency thyroid disorders. As Pakistan falls in the list of Iodine deficient countries where local diets are often iodine deficient which poses potential threat to our local population in general and pregnant women in particular to develop moderate to severe iodine deficiency. This, in turn, gives rise to the development of hypothyroidism in pregnant women which leads to certain adverse maternal and fetal outcomes⁷. In one study of India, prevalence of Euthyroid was 75%, subclinical hypothyroidism to be 9%, overt hypothyroidism in 3%, subclinical hyperthyroidism in 3.3% and overt hyperthyroidism in 0.4% of the pregnant ladies.⁸ This necessitate the need for screening for thyroid dysfunction during early pregnancy for every woman.

MATERIALS AND METHODS

Four hundred fifty-one healthy pregnant women fulfilling the inclusion and exclusion criteria visiting outpatient department of Nishtar hospital Multan were included. Pregnant ladies with age 20 to 40 years of any parity having singleton pregnancy presenting in our OPD with gestational age ranging from 13 weeks to 26 weeks, calculated from last menstrual period were enrolled. Pregnant women with known other medical disorders like thyroid, hypertension, diabetes mellitus, history of thyroid surgery or any miscarriage were excluded from our study. Informed consent was obtained from patients and ensured their confidentiality. After detailed history and examination, TSH test was done in all patients enrolled in study. The patients with deranged TSH test were further assessed by free T3 and T4 levels from central lab Nishtar hospital Multan. The reference range used in the study is based on guidelines of the American thyroid association 2011.⁹ All the data was entered and analyzed by using SPSS v-20. Mean and standard deviation was calculated for all variables like age, parity and gestational age in weeks. Frequency and percentage were calculated for parity, gravidity, euthyroid, subclinical hypothyroid, subclinical hyperthyroid. Post stratification chi square test was applied and $p\text{-value} \leq 0.05$ was taken as significant.

RESULTS

Our study included a total of 451 healthy pregnant ladies who met inclusion criteria of our study. Mean age of our study cases was noted to be 27.87 ± 4.76 years while majority of our study cases i.e. 289 (64.1%)

belonged to age group ranging from 20 - 30 Years. Mean Parity of our study cases was 2.88 ± 0.99 , our study results have shown that majority of our study cases i.e. 325 (72.1%) had parity equal or less than 3. Mean gravidity was 3.96 ± 0.95 and majority of these ladies i.e. 307 (68.1%) had parity ranging from 1 - 4. Mean gestational age of our study cases was 20.25 ± 4.30 weeks (range 13 - 26 weeks). Euthyroid was seen in 303 (67.2%) of our study cases, of the remaining 148 (32.8%) having thyroid dysfunction, subclinical hypothyroidism was seen in 94 (20.8%) and subclinical hyperthyroidism was seen in 54 (12.0%) of our study cases.

Table No. 1: Stratification of Euthyroid with regards to gestational age. (n=451)

Regards to gestational age: (n=451)			
Gestational age	Euthyroid		P – value
	Yes (n=303)	No (n=148)	
13 - 20 weeks (n=199)	161	38	0.000
21 - 26 weeks (n=252)	142	110	
Total	451		

Table No.2: Stratification of Subclinical hypothyroid with regards to gestational age. (n=451)

with regards to gestational age. (n=451)			
Gestational age	Subclinical hypothyroid		P – value
	Yes (n=94)	No (n=357)	
13 – 20weeks (n=199)	19	180	0.000
21 – 26 weeks (n=252)	75	177	
Total	451		

Table No.3: Stratification of Subclinical hyperthyroid with regards to gestational age. (n=451)

with regards to gestational age. (n = 451)			
Gestational age	Subclinical hyperthyroid		P – value
	Yes (n=54)	No (n=397)	
13 – 20 weeks (n=199)	18	181	0.108
21 – 26 weeks (n=252)	36	216	
Total	451		

DISCUSSION

Thyroid dysfunction has been reported to be associated with significant adverse pregnancy outcomes particularly in first trimester as it leads to complications in fetal brain development which ultimately leads to mental retardation among these children¹⁰⁻¹¹. Due to these adverse outcomes many researchers have reported that all pregnant ladies may be screened for thyroid hormones. Thyroid dysfunction has been reported to be associated with significant adverse pregnancy outcomes

particularly in first trimester as it leads to complications in fetal brain development which ultimately leads to mental retardation among these children¹²⁻¹³. Due to these adverse outcomes many researchers have reported that all pregnant ladies may be screened for thyroid hormones¹⁴⁻¹⁶. Our study included a total of 451 healthy pregnant ladies who met inclusion criteria of our study. Mean age of our study cases was noted to be 27.87 ± 4.76 years and 289 (64.1%) belonged to age group ranging from 20 - 30 Years. Taseer et al¹⁷ reported 26.7 ± 4.8 years mean age of pregnant ladies visiting our institutions which is similar to our study results. Ansari et al¹⁸ reported 26.7 ± 4.9 mean age of pregnant ladies which is similar to our study results. Haq et al¹⁹ from Rawalpindi also reported similar range corresponding to our study results.

Mean Parity of our study cases was 2.88 ± 0.99 , our study results have shown that majority of our study cases i.e. 325 (72.1%) had parity equal or less than 3. Mean gravidity was 3.96 ± 0.95 , our study results have demonstrated that majority of these ladies i.e. 307 (68.1%) had parity ranging from 1 – 4. Taseer et al¹⁷ reported similar results.

Thyroid dysfunction may results in premature deliveries, pre-eclampsia, increase in fetal mortality and low birth weight babies. Particularly in first trimester of pregnancy maternal hypothyroidism can be highly dangerous as it may lead to the mental retardation because it harms fetal brain development. Normal upper limit of TSH in pregnancy has been a subject of debate since a long time. In 2002, National Academy of Clinical Biochemistry (NACB) had laid down guidelines for the establishment of TSH reference intervals. Euthyroid was seen in 303 (67.2 %) of our study cases, subclinical hypothyroidism was seen in 94 (20.8 %) and subclinical hyperthyroidism was seen in 54 (12.0%) of our study cases. Rajput et al⁹ from India reported 75 % euthyroid, 21.5 % sub – clinical hypothyroidism and sub- clinical hyperthyroidism was 3.3 %. These findings are similar to our study results. Altomare et al²⁰ has also reported similar results. Wang et al from China also has reported high proportions of thyroid dysfunction among pregnant ladies.

CONCLUSION

High frequency of thyroid dysfunction was noted in our study. Subclinical hypothyroid was significantly associated with increasing age, parity more than 3 and gestational age. Subclinical hyperthyroid was also significantly associated with age. Our study results suggest that all pregnant ladies should be screened for these thyroid hormones to overcome these related adverse outcomes. This will help to decrease disease morbidity and improve quality of life of our patients.

Author's Contribution:

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Conflict of Interest: The study has no conflict of interest to declare by any author.

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