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Original Research Article

Prevalence of Thyroid Disorders in Pregnancy

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Abstract:

Background: Thyroid disorders are amongst the commonest endocrine disorders in women of child bearing age and are, therefore encountered commonly in pregnancy.

Objective: To study Prevalence of Thyroid Disorders in Pregnancy

Methods: The present Prospective observational study was undertaken in obstetrics and gynaecology OPD IPGME & R, S.S.K.M. Hospital, Kolkata, during the periods from February 2015 to July 2016 in collaboration with department of Endocrinology. Pregnant women in first, second and third trimester of any age group with no other medical complications with singleton pregnancy attending the (G&O) antenatal OPD will be selected as cases satisfying inclusion and exclusion criteria.

Results: The prevalence of thyroid disorders in pregnancy in this study is 9.3%. The percentage of hypothyroidism, hyperthyroidism and out of all thyroid cases were 85.71% and 14.28% respectively. Percentage of TPO-Ab positive cases out of all hypothyroid pregnant women was 14.28%. Out of total 2 TPO –Ab positive cases, one case was having TSH level of 4-10Mu/L and one case had TSH level of more than 10Mu/L. Out of 9 subclinical hypothyroid cases, all women had normal level of free T4. There was one case of overt hypothyroid and had low free T4 level. Both the case of hyperthyroidism, detected in our study had low TSH level (0.1Mu/L),high free T4 level and HCG level for gestational age and negative values for TPO-Ab and TSHR-Ab at the end of first trimester

Conclusions: Thyroid disorder is one of the common diseases associated with pregnancy and have bad pregnancy outcome. Out of all thyroid disorders associated with pregnancy subclinical hypothyroidism is the most frequently disease.

Keywords: Prevalence, Thyroid disorders, Pregnancy, Hypothyroidism, Hyperthyroidism.

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Introduction

Thyroid disorders constitute one of the most common endocrine disorders seen in pregnancy. Maternal thyroid function changes during pregnancy and inadequate adaptation to these changes results in thyroid dysfunction. These changes are a result of various factors like an increase in thyroglobulin due to elevated estrogen and human chorionic gonadotrophin, increase renal losses of iodine due to increase in glomerular filtration rate, modifications in peripheral metabolism of maternal thyroid hormone and modifications in iodine transfer to placenta.

The production of thyroid hormone and iodine requirement increases by 50% during pregnancy. Pregnancy is a stress test for thyroid, resulting in hypothyroidism in women with limited thyroidal reserve or iodine deficiency.

Thyroid disorder may be overlooked in pregnancy because of nonspecific symptoms and hyper metabolic state of pregnancy. Physiological changes of pregnancy can stimulate thyroid disease. Prevalence of thyroid disorder during pregnancy has a wide geographic variation. Western literature shows a prevalence of hypothyroidism in pregnancy of 2.5% and hyperthyroidism in pregnancy has prevalence of 0.1 to 0.4%. [1] There is paucity of data on prevalence of thyroid disorders in Indian pregnant women; few reports show a prevalence of 4.8% to 11% amongst Indian pregnant population. [2,3]

In view of adverse maternal and fetal outcome in pregnant women with thyroid disorder and obvious benefits of early diagnosis and treatment, some expert panels all around the world have suggested routine thyroid function screening of all pregnant women.

Therefore, this study was carried out in pregnant women during1st, 2nd & 3rd trimester who attended antenatal clinic of IPGME & R and SSKMH (G&O) OPD, to know the prevalence of thyroid

disorders in pregnant women.

Materials and Methods

The present Prospective observational study was undertaken in obstetrics and gynaecology OPD IPGME & R, S.S.K.M. Hospital, Kolkata, during the periods from February 2015 to July 2016 in collaboration with department of Endocrinology.

Pregnant women in first, second and third trimester of any age group with no other medical complications with singleton pregnancy attending the (G&O) antenatal OPD will be selected as cases satisfying inclusion and exclusion criteria

Inclusion criteria:

- Singleton pregnancy
- Primi gravid and multigravida belonging to any age.
- Pregnantwomenin1st,2nd,3rd trimester.

Exclusion criteria

- Multi fetal gestation
- Any antenatal or medical complications other than thyroid disorders.
- Had previous bad obstetrics with known cause & with hyperemesis graviderum

Sample Size: Being a observational study with the expected outcome to be relatively uncommon In view of logistic limitations formal sample size calculation is not performed; 150 pregnant women screened instead of 300.

Method of Data Collection

One hundred and fifty (150) pregnant women attending antenatal clinic in 1st, 2nd, 3rdtrimester at IPGME&R and SSKM Hospital, Kolkata and fulfilling inclusion criteria were enrolled in the study. Thorough and detailed history of each case was taken and entered in the Performa. The routine laboratory investigation reports along with some special investigations as done according to the necessity and avail facilities are noted serially.

Pregnant women coming for routine antenatal checkups. Thyroid profile advised in OPD on antenatal visit. The definition and diagnosis of thyroid dysfunction in pregnancy we have recently found that TSH level of 2.5mIU/L in first trimester, 3 in second trimester has been accepted as upper limit of normal range and TSH level of 3.5mIU/L in third trimester. Subclinical hypothyroidism is defined as the combination of a raised of thyrotropin concentration and normal serum thyroxine, considering upper limit of TSH as 2.5mIU/L which have negative outcome in pregnancy

Routine blood investigations including complete blood count, ABO grouping and Rh typing, HbsAg, VDRL, ICTC, Thalassemia screening, FBS/PPBS, thyroid profile (Total T4, FT4, TSH) and USG

Statistical Analysis: Data would be summarised by routine descriptive namely mean standard deviation for numerical variables and count and percentage for categorical variables. The incidence of various maternal and fetal outcomes would be expressed as a relative risk of 95% confidence interval, where relevant numerical variables compare between groups in student independent sample t test or mann-whitney U test, as appropriate. chi-square test or fishers test exact test will be employed for intergroup comparison of categorical variables $p<0.05$ will be considered as statistically significant.

Results

As mentioned earlier to screen about 300 patients from each trimester due to some logistic limitations could not performed over 300patients.150 pregnant women screened those come under inclusion criteria.

In the present study, 14 out of 150 pregnant women screened had thyroid disorders. The prevalence of thyroid disorders in this study was 9.33%

In the present study, the prevalence of subclinical hypothyroidism, overt hypothyroidism, TPO positive overt hypothyroid, subclinical hyperthyroidism and overt hyperthyroidism is 6%, 0.66%, 0.66% ,zero and 1.33% respectively as per Table – 1.Out of 150 pregnant women screened, 09 had subclinical hypothyroidism, thus making it the thyroid disorder with highest prevalence in pregnant women. 2and zero cases had overt hypothyroidism and subclinical hyperthyroidism respectively. Only 2 pregnant women had overt hyperthyroidism, thus it has the least prevalence of 1.33%.

Table 1: Prevalence of types of thyroid disorders among 150 pregnant women screened

Types of disorder	No. of cases	Percentage
Subclinical Hypothyroid	09	6%
Overthypothyroid	01	0.66%
Subclinical Hyperthyroid	00	00
Overthyperthyroid	02	1.33%
Tpo Positive Overt Hypothyroid	01	0.66%
Tpo Positive Hypothyroid	01	0.66%
Total	14	9.31%

Table-2 Shows TSH value between 4-10ug/100mlwith normal FT4 nine cases comes under subclinical hypothyroidism and TSH value> 10 had one case i.e; overt hypothyroidism.

Table 2: Distribution of different levels of free T4 in relation to overt and subclinical hypothyroidism

	TSH	Total No. Of Cases	No. Of Cases With Lowft4	No. Of Cases With Decrease/Normal Ft4	No. Of Cases With Normal FT4
Subclinical Hypothyroidism	4-10	09	00	00	09
Overt Hypothyroidism	>10	01	01	00	00

Table-3 Values of TSH at which TPO Ab found positive and its distribution accordingly shows TSH value between 4-10 had one case TPO Ab positive and TSH >10 had one case positive for TPOAb.

Table 3: Ranges of TSH at Which TP0Ab Positive

TSH	TPOA b positive
2-4	00
4-10	01
>10	01

TABLE-4 Out of 150 patient no. Of hypothyroid patient 25% diagnosed in 1st trimester,58.33% in 2nd trimester and 16.66% in 3rd trimester.

Table 4: Distribution of hypothyroid pregnant women in different Trimester

Trimester	Total no. Pregnancy	Total no. Of Hypothyroid Cases	Percentage
1st<12weeks>		03	25%
2nd<13-28weeks>		07	58.33%
3rd<29-40>Weeks		02	16.66%

Table 5: Distribution of patient according to presenting symptoms in TPO negative hypothyroidism

Symptoms	1st Trimester Total No. Cases Presented	2ndtrimester Total No. Cases Presented	3rd Trimester Total No. Cases Presented
Weakness		03	01
ExcessiveWeight Gain	01	02	01
Nausea&	01		01
Vomitting			
Lethargy & Weakness		01	
Lack of Concentration	01		

Table 6: Distribution of patients according to presenting symptoms in TPO positive hypothyroidism n=2

Symptoms	1st Trimester Total No. Cases Presented	2ndtrimester Total No. Cases Presented	3rd Trimester Total No. Cases Presented
Weakness		01	
ExcessiveWeight Gain			
Nausea &Vomitting			
Lethargy&Weakness		01	
Lack of Concentration			

Table 7: Distribution of patients according to presenting symptoms in overt hyperthyroidism.n=2

Symptoms	1st Trimester Total No. Cases Presented	2ndtrimester Total No. Cases Presented	3rd Trimester Total No. Cases Presented
Palpitation&Tremor	01		
Weakness		01	

Discussion

In present case study, we have 150 pregnant women who have attended our antenatal clinic during this study. Comparison of the outcome of our study with the various literatures will help us to enhance the knowledge and future management.

In the present study, the prevalence of subclinical hypothyroidism, overt hypothyroidism, TPO positive overt hypothyroid, subclinical hyperthyroidism and overt hyperthyroidism is 6%, 0.66%, 0.66%, zero and 1.33% respectively. Out of 150 pregnant women screened, 09 had subclinical hypothyroidism, thus making it the thyroid disorder with highest prevalence in pregnant women. 2and zero cases had overt hypothyroidism and subclinical hyperthyroidism respectively. Only 2 pregnant women had overt hyperthyroidism, thus it has the least preva-

lence of 1.33%. The prevalence of clinical hypothyroidism, subclinical hypothyroidism, overt hyperthyroidism, and subclinical hyperthyroidism in all pregnant women was 2.4%, 11.3%, 1.2%, and 0.3%, respectively. [4]

Prevalence of overt hyperthyroidism according to the present study was 1.33% which was comparable to studies conducted by Taghavi, et al. , Ajmani, et al. [5] (0.5%) and Stagnaro green, et al. Studies conducted by Dr Thanuja, et al. [6] and Tuija Mannisto, et al [7]. Shows prevalence of overt hyperthyroidism of 2 % and 1.3% respectively which was almost same when compared with the present study.

TSH value between 4-10ug/100mlwith normal FT4 nine cases comes under subclinical hypothyroidism and TSH value >10 had one case i.e; overt hypothyroidism. Values of TSH at which TPO Ab found positive and its distribution accordingly shows TSH value between 4-10 had one Case TPO Ab positive And TSH>10 had one case positive for TPOAb.

In the present study Out of 150 patients no. Of hypothyroid patient 25% diagnosed in 1st trimester, 58.33% in 2nd trimester and 16.66% in 3rd trimester. In a more study, Sahu et al. have done thyroid function during second trimester in high-risk pregnant women and reported that prevalence of thyroid disorders, especially overt and subclinical hypothyroidism was 6.47%. [8]

Serum TSH and free T4 are the best tests to screen and diagnose hypothyroidism during pregnancy. The prevalence of overt or subclinical hypothyroidism depends on the upper TSH cutoff levels used. There is strong evidence that the reference range for serum TSH is lower throughout the pregnancy compared with the non-pregnant state. The lowest serum TSH levels are observed during the first trimester of pregnancy and are apparently related to hCG stimulation of the thyroid gland as serum hCG levels are highest early in the gestation

Conclusion

Thyroid disorder is one of the common diseases associated with pregnancy and have bad pregnancy outcome. Out of all thyroid disorders associated with pregnancy subclinical hypothyroidism is the most frequently disease. The most sensitive indicator of thyroid profile during pregnancy is TSH level .Abnormal level of TSH in conjunction with abnormal level of free T4 is virtually diagnostic of abnormal thyroid profile in pregnancy

References

1. Negro R, Mestman JH. Thyroid disease in pregnancy. Best practice research. Clinical endocrinology & metabolism. 2011 Dec; 25(6):927–43.
2. Krassas GE, Poppe K, Glinoer D. Thyroid function and human reproductive health. Endocrine Reviews. 2010;31:702–755
3. ElBaba KA, AzarST. Thyroid dysfunction in pregnancy. International journal of general medicine.2012; 5:227–30. Epub 2012 Mar 6.
4. Gaberšček S, Zaletel K. Thyroid physiology and autoimmunity in pregnancy and after delivery. Expertre view of clinical immunology. 2011 Sep; 7(5):697–706.
5. Negro R. Significance and management of low TSH in pregnancy. In: Lazarus J, Pirags V, Butz S, editors. The thyroid and reproduction. New York: Georg Thieme Verlag; 2009; 84–95.
6. Csey B, Leveno K. Thyroid disease in pregnancy. Obstet Gynecol. 2006; 108(5):1283–1292.
7. Soldin OP, Hilakivi-Clarke L, Weiderpass E, et al. Trimester-specific reference intervals for thyroxine and triiodothyronine in pregnancy in iodine-sufficient women using isotope dilution tandem mass spectrometry and immunoassays. Clinica Chimica Acta. 2004; 349:181–189
8. 8. Glinoer D. The regulation of thyroid function in pregnancy: pathways of endocrine adaptation from physiology to pathology. Endocr Rev. 1997; 18(3):404–433.