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Prevalence of Maternal and fetal complications associated with hypothyroidism in antenatal women

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Abstract

Thyroid disorders are most frequent endocrine disorders disturbing women of reproductive age group. Which ismost regular thyroid disorder in pregnancy is maternal hypothyroidism and most impact on pregnancy outcome. In this study we have assessed the Prevalence of Maternal and fetal complications associated with hypothyroidism in antenatal women.A prospective observational study was done among 500 antenatal women registered in the Urban Health Trainingcentre of a Tertiary care hospital. Toassess based on TSH, Free T4 and Anti TPO antibody status along with Maternal and Foetal outcomes with respect to their Thyroid function status were also evaluated.The prevalence of thyroid dysfunction in pregnancy was 23.4%, subclinical hypothyroidism (19.6%) was the most commonthyroid disorder among these women.This study concludes that there may be an excessive prevalence of thyroid ailment in pregnancy. Subclinical hypothyroidism was determined to be the most important thyroid disease as in step with this study.

Key word: Hypothyroidism,Pregnancy, Meternal Complications and Pre-eclampsia

INTRODUCTION

Thyroid issues represent especially normal endocrine problems in pregnancy.[1]Recent studies have shown that which isn't simplest overt but subclinical thyroid dysfunction also has damaging consequences on maternal andfoetal outcome. In Pregnancy, it may be viewed as a state in which a mixture of activities concurs to adjust the thyroidal economic system. There is trade within the degree of thyroxine-binding globulin, general thyroid-hormone degree and alternate within the stage of thyroid stimulating hormone (TSH) throughout everyday being pregnant [2].Thyroiddysfunction (TD) may be overlooked in pregnancy because of the nonspecific signs and hypermetabolic kingdom of everyday pregnancy.

As HCG (Human Chorionic Gonadotrophin) is thyrotrophic its high tiers especially in 1st trimester bring about low TSH values and as a consequence reduce offs grow to be less. In women with low thyroid reserves pressure of pregnancy manifests as overt ailment.[3] In an iodide sufficient place, thyroid adaptations are well tolerated, as stored inner thyroid iodide is sufficient;

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however, in iodide deficient regions, those physiological diversifications cause large adjustments in pregnancy.Hypothyroidism is extensively widespread in pregnant ladies and the rate of detection, particularly in a growing country like India. While hypothyroidism is effortlessly handled, timely detection and remedy of the disorder could lessen the load of adverse fetal and maternal effects in pregnancy which might be commonly encountered. Prevalence of overt thyroid dysfunction is two–three percent in pregnant women subclinical dysfunction is 10%, while charge of autoimmunity is 5–10%.[4, 5]

When being pregnant overlaps maternal endocrine imbalance, undesirable outcomes for both mom and fetus can also seem. It is recounted that hypothyroidism in pregnancy is related to an multiplied threat of abortion, ordinary abortion, untimely transport, intrauterine fetal loss of life, fetal retardation and fetal congenital anomalies, congenital hypothyroidism, postpartum bleeding, anemia, post-partum despair and cardiac disorder, which results in accelerated maternal morbidity, perinatal morbidity and mortality. [6] For those motives, it's most important to adopt suitable strategies to discover women prone to these detrimental results and to implement screening equipment for early detection and initiation of effective management. This study aims to determine the Prevalence of Maternal and fetal complications associated with hypothyroidism in antenatal women.

MATERIAL AND METHODS

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This observational look at turned into carried out at Sri Lakshmi Narayana, Puducherry India. We have interaction antenatal women in third trimester admitted into the obstetric ward with singleton being pregnant for different obstetric indicators. Informed consent changed into acquired from all subjects. Subjects had been chosen regardless of age, parity, house and socioeconomic popularity. Women with a couple of pregnancies, a known case of thyroid disease, on any remedy or with any pre-current clinical ailment, such as diabetes mellitus, or cardiac or pulmonary ailment have been excluded in this study. Routine hematological parameters and estimation of T3, T4 and TSH changed into carried out. Patients with a deranged thyroid profile have been sooner or later assessed for maternal and fetal complications. Infertility, own family history of thyroid disease, menstrual history, recurrent abortions, mean T3, T4, TSH degrees, haemoglobin levels, maternal and fetal outcome were the main take a look at variables. Univariate evaluation changed into performed to evaluate co-relation of thyroid

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disorders with other clinical features like menstrual rhythm, infertility, family history of thyroid sickness and miscarriage.

Estimation for TSH was conducted using the Enhanced Chemiluminescence method. Estimation of free T3 and free T4 was subsequently carried out when TSH levels were abnormal. Cut off values used for TSH were those indicated by the American Pregnancy and Thyroid Association: 1st trimester: 0.1–4.0mIU/L, 2nd trimester: 0.2–4.5mIU/L, 3rd trimester: 0.3 - 5mIU/L. Normal free T4 level is 0.7 to1.8 ng/dl and free T3 level is 1.7 to 4.2 pg/ml. Patients with normal fT4 and high TSH were considered to have subclinical hypothyroidism (SCH); those with low fT4 and high TSH were considered to have overt hypothyroidism; those with normalfT4 and low TSH were considered to have subclinical hyperthyroidism; and those with highT4 and low TSH were considered to have overt hyperthyroidism.[7]

The standards of exclusion from the observe are a couple of: prophylaxis with iodine, the presence of thyroid nodules at the echographic exam, the existence of a baby beginning in a duration much less than 12-18 months, other major scientific troubles which can interfere with the thyroid fame, a chronic medicinal drug which includes iodine, hepatitis records or HIV congenital anomalies, refuse of giving formal consent, records of surgical intervention which needed neighborhood painting with iodine. The standards of inclusion in the observe were represented by way of the analysis given through the obstetrician and endocrinologist and the detection of the hormonal profile through lab tests.

Data were analyzed by the two-way method and within a 95% confidence interval. The SPSS 18 program was used for data analysis (SPSS Inc., Chicago, IL, USA). In addition to descriptive statistical analysis (percentage, minimum, maximum, mean, standard deviation), the intergroup comparisons were done according to the distribution of the data. The Student's t-test, Chi-square test, and Mann Whitney-U test were used. A value of $p<0.05$ was considered statistically significant.

RESULTS

A total of 500 antenatal women were integrated in present study. Mean age of the study subjects were 23.11 years (SD=+/-5.39).Amidfamily history of thyroid disorder was found in 45(9.2%) of study subjects and 169 (33.8%) were from low-socio economic background.Out of total Thyroid disorders were established among 117 (23.4%) study subjects. (Table 1) represents the assorted thyroid dysfunction among the antenatal women. Only 20 (17.9%) antenatal women

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with thyroid disorder had anti TPO antibody positive, of which 5 had subclinical hyperthyroidism.

Table:1**Percentage of different thyroid disorders in the study subjects**

Type	Number	Percentage
Euthyroid(Normal TSH level)	383	76.6%
Overt Hypothyroidism	9	1.8%
Subclinical hypothyroidism	98	19.6%
Subclinical Hyperthyroidism	10	2%
Total	500	

Table: **2** Study subjects along with maternal complications.

Maternal Complications	Mother's with abnormal Thyroid Function(n=117)	Mother's with normal thyroid function(n=383)
Anaemia	58(49.5%)	45(11.7%)
Gestational Diabetes	19(16.2%)	13(3.3%)
Post partumHaemorrhage	2(1.7%)	1(0.2%)
Abruption Placenta	1(0.8%)	0
Miscarriage	29(24.7%)	12(3.13%)
Pre-eclampsia	15(12.8%)	7(1.8%)

Table 2 showed that impulsive miscarriage occurred in 41 women (8.20%).The mode of delivery was LSCS in 38 (10.38%) antenatal women for various maternal and foetal complications. Thyroid disorder was prevalent in 19 (3.8%) women subjected to LSCS. An assortment of maternal complications was set up in 126 antenatal women, 77 of these women were found to have thyroid dysfunction. Chi square test was done to analyze the difference between the proportion of maternal complication among those with thyroid dysfunction and with normal thyroid function. This was found to be statistically significant.

Table:**3**Study subjects along withfoetal complications.

FoetalComplications	Mother's with abnormal Thyroid Function(n=117)	Mother's with normal thyroid function(n=383)
Intra uterine growth retardation	2	1
Low birth weight	3	4
Neonatal thyroid abnormality	4	3

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Neonatal Death	1	2
Neonatal Hyperbilirubinemia	19	25
Still Birth	6	9
Prematurity	5	7
Total	40	51

Foetal complications were found in a total of 91 (18.2%) study subjects. Only 40(8%) among the maternal thyroid dysfunction group had foetal complications. On applying the chi square test no statistically significant difference (p value=0.5) was found between the normal maternal thyroid function group and the abnormal maternal thyroid function group with regards to foetal complications (Table 3).

DISCUSSION

Present look at became an effort to examine the scenario of thyroid disorder and its effect on being pregnant final results. In view of the inconsistent results from diverse studies on this difficulty executed across the world, this kind of take a look at is applicable for higher expertise of the scenario domestically. Studies between antenatal women for thyroid dysfunction display occurrence varying from 10%-36%.[8] The incidence of thyroid disorder (23.4%) in this observe is extra in step with the effects of a study by way of Raj put R et al in Harayana.[9]Though the national hints do now not advocate regular screening of pregnant ladies for thyroid sickness

In Kerala, it's miles a recurring exercise to screen the women for thyroid sickness with baseline serum TSH evaluation throughout the early period of gestation. If the TSH values are deranged, Free T4 and Anti TPO antibody willpower is a obligatory exercise. This protocol allows in identity of thyroid disorder early in being pregnant, following which corrective measures are taken at an early stage which prevents maternal and fetal complications. In present study principal thyroid sickness become subclinical hypothyroidism (19.6%) this finding is much like the consequences of various other research done across India.[10]

There are many researches which sheds light at the data related to maternal and foetal headaches due to thyroid dysfunction.The various headaches which would possibly arise because of this disorder degree from miscarriage in pregnant girls to foetal deaths. The gamut of complications warrants early identity and prompt correction of this condition.[11]In present study we were statistically importantorganization between maternal complications and thyroid disorder

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in pregnancy, the complication studied were anaemia, miscarriage, pre-eclampsia, gestational diabetes mellitus, abruption placenta and post partumhaemorrhage.

In a studyby Vimal Nambiar et al, women with thyroid disorder had 3 times more miscarriage when compared to the normal antenatal women, which is correlated with present study.[12] Pre-eclampsia was found to have statistically significant association with hypothyroidism similar to theKharb S et al study.[13] However we did not get a statistically significant association between fetal outcomes and thyroid status of these women.

Though there are various studies which show that thyroid disorders might result in various fetal complications like still birth, IUGR, low birth weight, neonatal hypothyroidism, neonatal hyper bilirubinemia and neonatal death.9-10 This study establish a statistically significant association between maternal thyroid disorder and foetal complications. There are few studies with similar findings as that of the present study, notable among them is the study by Bluementhal NJ, which is a cohort study done in Mumbai, the findings revealed that there was no significant difference between documented complications of pregnancy outcomes in the group with thyroid disorder and euthyroid pregnant women.

All the antenatal women in this study were referred to a physician, if diagnosed with thyroid dysfunction and were followed up by the investigators for compliance of medications (as prescribed by the physician). Most of the treated antenatal women had near normal thyroid function test values during their follow up period. Early diagnosis and prompt treatment might be the reason for overall rate of low maternal and foetal complications in the study group.

Ethical issues and confounding factors like thyroid medications are a hindrance to studies of similar nature. Revised guidelines by the American Thyroid association13 emphasis the need for a regional data base for determining the upper threshold of thyroid hormone values in pregnancy. There is also a need for revising the existing national guidelines for the identification of thyroid disorders in pregnancy.

Though there are various studies which display that thyroid disorders would possibly bring about diverse fetal complications like nevertheless delivery, IUGR, low beginning weight, neonatal hypothyroidism, neonatal hyper bilirubinemia and neonatal death.[14]

This takes a look at set up a statistically significant affiliation among maternal thyroid sickness and foetal complications. There are a small number of studies with comparable findings as that of the winning have a take a look at, excellent amongst them is the study thru

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Bluementhal NJ,15that is a cohort study accomplished in Mumbai, the findings revealed that there was no extensive difference among documented headaches of pregnancy outcomes inside the group with thyroid sickness and euthyroid pregnant women.

All the antenatal women in this have a look at had been cited a doctor, if recognized with thyroid dysfunction and had been observed up via the investigators for compliance of medicinal drugs. Most of the dealt with antenatal women had near normal thyroid characteristic test values throughout their observe up duration. Early prognosis and activate remedy is probably the purpose for typical rate of low maternal and foetal complications within the look at institution.

Ethical problems and confounding factors like thyroid medications are a problem to research of comparable nature. Revised hints by way of the American Thyroid association1[16]emphasis the need for a local records base for determining the upper threshold of thyroid hormone values in being pregnant. There is also a need for revising the present countrywide recommendations for the identification of thyroid issues in being pregnant.

CONCLUSION

These observations conclude that there may be a high prevalence of thyroid disease in being pregnant. Subclinical hypothyroidism is the most ordinary amongst them. The examiner additionally highlights a substantial association between maternal thyroid disorder and maternal headaches. There turned into no statistically sizeable affiliation among antenatal thyroid disorders and foetal headaches. Large scale population-based research addressing the confounding factors to evaluate the impact of thyroid disorder on being pregnant consequences is called for

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