ORIGINAL RESEARCH

Study of Maternal and Fetal Complications During Pregnancy Related With Thyroid Disorders

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ABSTRACT
Background: The thyroid undergoes physiological changes during pregnancy, such moderate enlargement of the gland and increasing of vascularization. **Objective:** To study maternal and fetal complications during pregnancy related with thyroid disorders. **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. **Results:** Even after receiving adequate L-troxin supplementation throughout their pregnancies, hypothyroid patient are more prone to anemia, PPH, APH, Eclampsia, lactation failure, puerperal pyrexia. In TPO –Ab positive cases incidence of these complications ismore than TPO-Ab negative cases. IUGR, preterm delivery and early trimesterare common fetal complications in hypothyroidism in pregnancy. In TPO-Ab positive cases these complications occur more frequently than TPO-Ab negative cases. There is increased incidence of LSCS in pregnancy with thyroid disorders mainly with hyperthyroidism n hypothyroidism due to hypertensive complication, IUGR and fetal distress. There is increase incidence of fetal distress, low birthweight ,neonatal jaundice ,sepsis, diarrhoea.
Conclusions: Patients with subclinical hypothyroidism remain a symptomatic, but have bad obstetric and neonatal outcome, although less severe than overt hypothyroidism cases.
Keywords: Maternal, Fetal, Complications, Pregnancy, Thyroid Disorders

INTRODUCTION
Thyroid disorder during early pregnancy has been associated with adverse obstetric and fetal outcome. The main obstetric complications are abortion, preeclampsia,abruption placenta and preterm labour and the fetal complications are prematurity, low birth weight, still birth and perinatal death. There is an increase in the incidence of NICU admissions and respiratory distress syndrome. Maternal hypothyroidism in the 1st trimester may be harmful for fetal brain development and leads to mental retardation and cretinism which includes impairment of mental and physical growth and development and has a negative impact on most organ systems. [1]Several important obstetrical complications are the increased risk of spontaneous miscarriage, stillbirth and perinatal death. Other frequent complications are preterm delivery, fetal distress and increase in frequency of low birth weight infants, [2-4] while the occurrence of gestational hypertension, placental abruption and postpartum hemorrhage have been shown to be increased in some, but not all, studies. [5] 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 maternal and fetal outcome in pregnant women of thyroid disorders.

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 routinelaboratory 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 pregnancyRoutine 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 compares 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
In the present study the incidence and distribution hypothyroid screened pregnant women according to her age of gestation & time of delivery was about 72.72% mother delivered at term gestation and 27.27% delivered preterm and none of them are postdated. In the present study Incidence of screened hypothyroid pregnant women was 66.66% pregnant women belongs to middle class family, lower (16.66%),high(16.66%) respectively. In hyperthyroid pregnant women out of 2 cases one belongs to lower and other to middle class.Among 12 patients of hypothyroidism, 03(27.27%) had weight gain <8 Kg, 06(54.54%) had weight gain 8-10 Kg, 01 case(9.09%) had weight gain 11-12Kg and01(9.09%) case had more than 12 Kg weight gain during pregnancy. One patient was not included in this table because she had spontaneous abortion in 1st trimesterIn the present study, the incidence of maternal complications in the cases of subclinical hypothyroidism was Anaemia (30%), eclampsia (30%) preterm delivery (00), and abruption placenta (10%) .Incidence of Anaemia in the cases of overt hypothyroid is 50% .

Table 1: The incidence of maternal complications in the cases of subclinical hypothyroidism

COMPLICATION	TPO NEGATIVE (n=09)	PERCENTAGE	TPO POSITIVE (n=2)	PERCENTAGE
ANAEMIA	03	33.33%	01	50%
ECLAMPSIA	03	33.33%	MATERNAL-	-
APH	01	11.11%	-	-
PRETERM	00	-	-	-
POLYHYDRAMINOS	00	-	-	-

In the present study, the incidence of fetal complications in the cases of TPO negative hypothyroidism was IUGR (33.33%), IUFD (11.11%) and Spontaneous abortion (11.11%). In the present study, the incidence of fetal complications in the cases of TPO positive was IUGR (100%) .

Table 2: incidence of fetal complications in the cases of TPO negative hypothyroidism

FETAL COMPLICATION	TOTAL NO. CASES TPO NEGATIVE n=09	PERCENTAGE	TOTAL NO. OF CASES TPO POSITIVE n=2	PERCENTAGE
SPONTANEOUS ABORTION	01	11.11%	00	00
IUFD	01	11.11%	00	00
CONGENITAL ANAMOLY	00	00	00	00
IUGR	03	33.33%	02	100%

In the present study the incidence of postpartum complication among TPO NEGATIVE was PPH (11.11%),lactation failure was(22.22%), puerperal pyrexia (22.22%) in n= 9 patients as one of them had spontaneous abortion. In TPO POSITIVE out of 2 patient 1 had lactation failure (50%). Table 3

Table 3: Different Postpartum complication

COMPLICATIONS	TOTAL NO. CASES	TPO NEGATIVE n=09	Percentage	TPO POSITIVE n=2	Percentage
PPH	11	01	11.11%	-	
ACTATION FAILURE	20	02	22.22%	01	50%
PUEPERAL SEPSIS	22	02	22.22%	-	
WOUND INFECTION	00	00	-	-	

TABLE-4Shows in the present study hyperthyroid mother 100% Post partum haemorrhage as postpartum complication

Table 4: Different Postpartam complication in hypothyroid mother

COMPLICATIONS	TOTAL NO. OF CASES (HYPERTHYROID)n=2	PERCENTAGE
PPH	2	100%
LACTATIONFAILURE	00	00
PUEPERALPYREXIA	00	00
WOUNDINFECTION	00	00

TABLE -5 In the present study the incidence of neonatal complication found in subclinical hypothyroid was pathological jaundice (25%), sepsis (25%) , diarrhea (12.5)and no other complication found in n=8 mothers as one had spontaneous abortion and the other was IUFD. Among overt hypothyroid mother out of 2 cases only 1 had pathological jaundice (50%) and 2nd case had diarrhoea(50%).

Table 5: Different Neonatal Complication

	TPO NEGATIVE n=8	PERCENTAGE	TPO POSITIVE n=2	PERCENTAGE
PATHOLOGICALJAUNDICE	02	25%	01	50%
SEPSIS	02	25%	-	-
CONGENITALANAMOLY	-	-	-	-
DIARRHOEA	1	12.5%	01	50%
CONGENITAL GOITRE/HYPOTHYROIDISM	-	-	-	-

DISCUSSION

In the study done by Sahu MT, et al.[6] the complications like PE (9.8%), PTD (10.3%), IUGR (2.4%) and SB (2.5%), were seen in pregnant women having subclinical hypothyroidism. In these two studies there was no incidence of abruption placenta and abortion, but in the present study it is 1.56% and 4.3% respectively, which is significant. In the present study, the incidence of maternal complications in the cases of subclinical hypothyroidism was Anaemia (30%),eclampsia (30%) preterm delivery (00), and abruption placenta (10%) .Incidence of Anaemia in the cases of over thypothyroid is 50%.In the present study, the incidence of fetal complications in the cases of TPO negative hypothyroidism was IUGR (33.33%), IUFD (11.11%) and Spontaneous abortion (11.11%). In the present study, the incidence of fetal complications in the cases of TPO positive was IUGR (100%). the American association of clinical endocrinologists and the endocrine society consensus panel Women with thyroid disorder, both overt and subclinical are at increased risk of pregnancy related complications such as spontaneous abortion, preeclampsia, preterm labor and abruption placenta. Fetal complications include low-birth weight babies, preterm delivery, intra uterine growth restriction and

still birth. [5]

In the present study fetal distress in hypothyroid pregnant women found 30% and in hyperthyroid pregnant women was 50%. Birth weight among Subclinical hypothyroid mothers 44.44% babies had birth weight between2- 2.4Kg,33.33%babies had birth weight between2.5-3Kg. Overthypothyroid had birth weight 2-2.4Kg in 2 patient. Fetal distress and increase in frequency of low birth weight infants , while the occurrence of gestational hypertension, placental abruption and postpartum haemorrhage have been shown to be increased in some, but not all, studies . [5]

In the present study the incidence of postpartum complication among TPO NEGATIVE was PPH (11.11%),lactation failure was(22.22%), puerperal pyrexia(22.22%) in n=9 patients as one of them had spontaneous abortion. In TPO POSITIVE out of 2 patient 1 had lactation failure(50%). In the present study hyperthyroid mother100% post partumhaemorrhage as postpartum complication

The increase haemorrhages could be explained through a maturation process of the placenta and they appear especially if there is a severe hypothyroidism, but they have been also signalled in the cases of subclinical hypothyroidism andother thyroid disorders.

CONCLUSION

Patients with subclinical hypothyroidism remain a symptomatic ,but have bad obstetric and neonatal outcome, althoughless severe than overt hypothyroidism cases. Even after receiving adequate L-troxin supplementation throughout their pregnancies , hypothyroid patient are more prone to anemia , PPH, APH, Eclampsia, lactation failure,puerperal pyrexia.In TPO –Ab positive cases incidence of these complications is more than TPO-Ab negative cases. IUGR , preterm delivery and early trimester are common fetal complications in hypothyroidism in pregnancy .In TPO-Ab positive cases these complications occur more frequently than TPO-Ab negative cases. There is increased incidence of LSCS in pregnancy with thyroid disorders mainly with hyperthyroidism n hypothyroidism due to hypertensive complication, IUGR and fetal distress. There is increase incidence of fetal distress,low birthweight, neonatal jaundice ,sepsis, diarrhoea. Gestational transient thyrotoxicosis is the most common variant of hyperthyroidism in pregnancy, which is non autoimmune disorder. It requires only symptomatic treatment and persist for short duration and has no adverse obstetric effect per se. Neonatal hypothyroidism and congenital anomaly are not found usually in properly treated cases of thyroid disorders

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