Journal Of Harmonized Research (JOHR)

Journal Of Harmonized Research in Medical & Health Sci.
4(1), 2017, XXX-XXX

ISSN 2395 – 6046

Original Research Article

RETROSPECTIVE ANALYSIS OF PATIENTS WITH HYPOTHYROIDISM DURING PREGNANCY AT A TERTIARY CARE CENTRE: OBSTETRIC AND NEONATAL OUTCOME

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Abstract: Objective: Purpose of this study was to evaluate the obstetric and neonatal outcome associated with hypothyroidism during pregnancy. **Material and methods**: This was a retrospective cohort study of all women registered in our antenatal clinic between January'11 to December'11.Patients were either diagnosed prior to pregnancy or diagnosed in first trimester. These all patients were analyzed in terms of incidence of obstetric complications, mode of delivery, neonatal outcome and neonatal TSH. **Results:** 90 patients were diagnosed to have hypothyroidism with pregnancy during this period. Mean age of these patients were 26.5 years. Among obstetric complications most common was pre-eclampsia 30 %(17/90) followed by GDM 24.5 %(14/90) and IUGR 17.5% (21/90).44.4 %(40/90) deliveries occurred by LSCS. Among neonatal complications, 27.7% (25/90) patients had fetal distress, 12% (11/90) babies has low APGAR scores (≤7), 3.3% (3/90) patients had intra-uterine fetal demise (IUD) and 2.5% (2/90) had abortion. None of the neonate had hypothyroidism. Mean neonatal TSH was 1.63mIU/ml (ranged between 0.1-8.72). **Conclusion:** Patients with hypothyroidism during pregnancy were found to have increased risk of obstetric complications, operative delivery and fetal distress, though were not found to be associated with increased incidence of neonatal hypothyroidism.

Key words: Hypothyroidism, Pregnancy, Thyroid Stimulating Hormone (TSH)

Introduction: Thyroid disorders are very common in pregnancy and are known to be associated with adverse pregnancy and neonatal outcome. Hypothyroidism i.e. deficiency of Thyroid hormones is prevalent in pregnancy to an extent of overt hypothyroidism up to 0.3-0.5% and subclinical hypothyroidism to 2-5%[1]. It's prevalence in India is about 6-8%.Hypothyroidism is diagnosed when conc. of TSH is high and T4 is low, while subclinical

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Received on: November 2016
Accepted after revision: February 2017

hypothyroidism is a state of high TSH (S. TSH>2.5mIU/ml)[2] and normal T4.

Pregnancy itself has a impact on thyroid homeostasis and hypothyroidism in pregnancy is associated with adverse maternal and perinatal outcome.

As far as maternal morbidity is concerned, several studies, though mostly retrospective have shown association of hypothyroidism with miscarriages, anaemia in pregnancy, pre-eclampsia, abruptio placentae, Postpartum haemorrhage, pre-term birth and post-oartum Thyroiditis.

As we know that fetal Thyroid gland becomes fully functional by 2nd trimester and till that time fetus is wholly or partially dependent on maternal Thyroid gland for its thyroxine requirements, and deficiency of thyroxine leads to not only adverse pregnancy outcomes in the form of low birth weight, prematurity and increased risk of respiratory distress syndrome but also subnormal intelligence of the baby.

Objective of the study: To know the effect of hypothyroidism on obstetric and neonatal outcome during pregnancy.

Material & Methods: Type of study: Retrospective cohort study Duration of the study: Jan'11 to Dec'11(one year)

Present study was conducted in the Obstetric unit of a tertiary care center. Data was retrieved retrospectively from the hospital records and patients were contacted telephonically, whenever needed. For this study, all patients presented with Hypothyroidism, diagnosed either before or during pregnancy within this timeframe were recruited and the data was retrospectively analyzed in terms of obstetric complication, mode of delivery, neonatal outcome and neonatal TSH. Neonatal TSH done at 48 hours of life for all hypothyroid mothers as an institutional protocol.

Observations: Total no. of cases (n) – 90

Table-1: Demographic profile

Mean Age	26.5 years
Obstetric History	Primigravida- 19(21.1%) Previous abortion- 21(23.3%) Multi- 50(55.6%)
Area Of Residence	Rural- 21(42%) Urban- 69(58%)

Among 90 patients with hypothyroidism, 17 (18.8%) belonged to the high endemic area.

With respect to time of diagnosis of the condition, 25(27.8%) patients diagnosed during pregnancy itself, while 65(72.2%) patients were already diagnosed prior to pregnancy, out of these 65 patient, dose increment (in addition to 25% at the diagnosis of pregnancy) needed in 19/65 (29.23%) and 60 Pts (90%) diagnosed within 5 yrs of present pregnancy. One patient was with H/O thyroidectomy on thyroxine replacement (175µg/day).

Table- 2A: Associated Obstetricscomplications (N=57)

S no.	complication	N (%)
1.	Pre-eclampsia	17 (30.0)
2.	GDM	14 (24.5)
3.	IUGR	10 (17.5)
4.	ICP	4 (7.0)
5.	Oligoamnios	4 (7.0)
6.	H/o Infertility	6 (10.5)
7.	Abortion	2 (3.50)

Table 2B: Associated Medical illness

s. no.	disease	N (%)
1.	SLE	1 (1.1%)
2.	APLA	3 (3.3%)
3.	Hyperprolactinemia	2 (2.2%)
4.	Pit. adenoma	2 (2.2%)

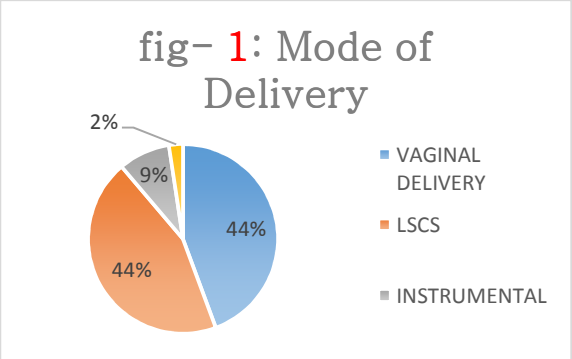

TABLE- 3 : Neonatal outcome (N=90)

S. No.	Outcome	N (%)
1.	Live births	85 (92.2%)
2.	Stillbirths	3 (3.3%)
3.	Fetal distress	25 (27.7%)
4.	Low A/S(<7)	11 (12%)
5.	Intraventricular Hemorrhage (IVH)	1 (1.2%)

Neonatal TSH (n= 65) was found to be in the range between 0.1- 8.72 m U/L and mean neonatal TSH – 1.63

Results: Total no. of deliveries during this period was 1279, and number of hypothyroid patients among all was 90, hence making Proportion of hypothyroid patients during pregnancy in our part of the world is 7.03%.

Among obstetric complications most common was pre-eclampsia 30 %(17/90) followed by GDM 24.5 %(14/90) and IUGR 17.5% (21/90). 44.4 %(40/90) deliveries occurred by LSCS. Among neonatal complications, 27.7% (25/90) patients had fetal distress, 12% (11/90) babies has low APGAR scores (≤7), 3.3% (3/90) patients had intra-uterine fetal demise (IUD) and 2.5% (2/90) had abortion. None of the neonate had hypothyroidism. Mean neonatal TSH was 1.63mIU/ml (ranged between 0.1-8.72).

Discussion: Thyroid disease is the most common endocrine condition affecting women of reproductive age. This study was aimed to know obstetric and neonatal outcome associated with hypothyroidism during pregnancy.

The major findings are that 7.03% women attending a tertiary care institution have hypothyroidism and out of all hypothyroid patients, 18.8% belonged to the high endemic area. Study conducted by Sahu *et al*.[3]also identified prevalence of thyroid disorders among Indian pregnant women, especially overt and subclinical hypothyroidism was 6.47%.

Thyroid dysfunction during pregnancy had been an important research area in clinical endocrinology due to the fact that thyroid dysfunction has immense impact on maternal and fetal outcomes.[4, 5]

Pregnancy has a profound effect on thyroid gland function. The physiological changes of pregnancy are such that the demand for thyroid hormones is increased as pregnancy progresses.[6] this study also shows dose increment needed in 29.23% pregnant women as gestation advances. In women with previously diagnosed overt or subclinical hypothyroidism taking L-T4 before pregnancy, the dose should be increased initially by 25 mcg daily once pregnancy is confirmed to compensate for the increased T4 demand of pregnancy. Thyroid function should be monitored every four to six weeks and further increases in L-T4 dose may be required to maintain an optimal serum TSH (0.5–2.5 mU/l).[7]

Although more frequent in overt hypothyroidism, both overt and subclinical hypothyroidism are associated with an increased risk of adverse obstetric and neonatal outcomes.[8] most common obstetric complications associated with hypothyroidism in pregnancy in this study were pre-eclampsia – 30%, GDM -24.5% and IUGR -17.5% which corroborates study conducted by Chen LM *et al*,[9] however, it is difficult to comment upon, that whether this association is causal or casual.

History of infertility and previous miscarriages as revealed in this study were 10.5% and 3.5% respectively. A Systematic Review and Meta-Analysis [10] comparing euthyroid pregnant women and pregnant women with subclinical hypothyroidism also identified at higher risk for pregnancy loss (RR 2.01), placental abruption (RR 2.14), premature rupture of membranes (RR 1.43) and neonatal death (RR 2.58).Still births rate in our study was 3.3 %.

Caesarean section rate for fetal distress was significantly higher among pregnant hypothyroid women.[3] In this study fetal distress and Low Apgar score were observed in 27.7% and 12.0% cases respectively. LSCS was done in 44% cases which is higher than euthyroid pregnant women.

Because of the fetal requirement for maternal T4 until approximately 12 weeks of gestation, neurodevelopmental delay is a particular risk in the infants of hypothyroid pregnant mothers,[5] however maternal hypothyroidism (non-auto immune) does not increase the incidence of

neonatal hypothyroidism. Neonatal TSH was found to be in the range between 0.1- 8.72 m U/L and mean neonatal TSH was 1.63.

This study demonstrates trend in prevalence of hypothyroidism in India when data from other previous studies were analyzed. However, there are few limitations of this study. We have not carried out autoimmunity testing, we have not evaluated other causes of hypothyroidism in these women (e.g. Iodine deficiency/secondary & tertiary hypothyroidism)

This study concludes that there is a high prevalence of hypothyroidism (7.03%) and thyroid disease can have significant effects on reproduction from conception to birth, however, with appropriate screening, risks can be significantly reduced if not ameliorated. Universal screening of hypothyroidism may be desirable in our country.

Conclusion: In conclusion, hypothyroidism is highly prevalent endocrinological disorder during pregnancy, though none of the existing guidelines recommend routine screening for hypothyroidism during pregnancy, but as this is associated with increased risk of associated obstetrics Complications, higher incidence of operative delivery, increased risk if fetal distress and low APGAR scores and effect on neonatal mentation and I.Q., first trimester screening should be offered wherever feasible as early diagnosis and timely supplementation of Thyroxine can reduce the complication rate, although maternal hypothyroidism does not increase the incidence of neonatal hypothyroidism, if well controlled during pregnancy.

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