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**Original Research Article**

# A study of effects of hypothyroidism on antenatal patients

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## ABSTRACT

**Background:** After diabetes mellitus, thyroid disorders are the most common endocrine disorders in pregnancy. The most common thyroid gland dysfunction in pregnancy is hypothyroidism with estimated prevalence of 1.5-4.4% of pregnant women. Effects of hypothyroidism in pregnancy include anemia, pre-eclampsia, prematurity, IUGR, low birth weight, mental retardation in neonate. The objective of this study is to find the association of hypothyroidism and its adverse outcomes on mother and the fetus that is listed above.
**Methods**: A study was conducted over a period of 6 months over 50 antenatal patients with hypothyroidism from Jan 2021 to August 2021 in the department of obstetrics and gynecology, Cama and Albless hospital, Mumbai with inclusion, exclusion criteria. History of infertility, family history of thyroid disease, menstrual pattern, recurrent abortion and fetal outcomes were the main study variables.
**Results:** In this study, majority of hypothyroidism belonged to the age group of 26-30 years (54%). A high prevalence was found in G2 (26%) and antenatal hypothyroidism with past h/0 abortions were found in 26% patients. Low birth weight is found in 32% cases of hypothyroidism, NICU admissions seen in 32% cases of hypothyroidism, 22% cases were found to have anemia.
**Conclusions:** Hypothyroidism is a common health problem in antenatal patients. We concluded that hypothyroidism is more commonly seen to be associated with low birth weight, anemia, pre-eclampsia, NICU admission in neonate. Early ANC registration and regular ANC checkups help in early recognition and initiating early treatment, thus improving fetomaternal outcome.

**Keywords:** Hypothyroidism, Low birth weight, Antenatal, Anemia

## INTRODUCTION

After Diabetes Mellitus, thyroid disorders are the most common endocrine disorders during pregnancy.[1] The most common thyroid gland dysfunction in pregnancy is hypothyroidism. It is estimated that the prevalence is 1.5-4.4% of pregnant women. [1]With hypothyroidism many had history of recurrent abortions and also complications during antenatal period like preeclampsia, abruption placenta, IUGR and preterm delivery.[2] Effects of hypothyroidism in pregnancy are anemia, low birth weight and mental retardation in neonate. The objective of this study is to find the association of hypothyroidism and its adverse outcomes on mother and the fetus which is listed above.

## METHODS

A prospective clinical study was conducted over a period of 6 months over 50 antenatal patients with Singleton pregnancy with hypothyroidism from Jan 2021 to August 2021 in the department of obstetrics and gynecology, Cama and Albless hospital, Mumbai with inclusion, exclusion criteria. Detailed history taken and examination done and blood sample collected and sent for serum TSH, T3, T4 levels. History of infertility, family history of thyroid disease, menstrual pattern, recurrent abortion and fetal outcomes were the main study variables with the following inclusion- exclusion criteria. Data was analyzed in Microsoft excel software for statistical correlation.

### *Statistical analysis*

Statistical analysis is done by SPSS software and difference with a $p<0.05$ was considered statistically significant.

### *Inclusion criteria*

Antenatal patients with 30 weeks or more than 30 weeks gestation and antenatal patients giving consent for the study were included in the study.

### *Exclusion criteria*

Antenatal patients having hypothyroidism prior to pregnancy or any other autoimmune disease and those not willing to participate in the study. were excluded from the study.

## RESULTS

A total of 50 antenatal patients with hypothyroidism participated in this study and the following observations were made.

### *Parity and hypothyroidism*

**Table 1: Parity.**

| Parity | No. of cases | Percentage (%) |
|---|---|---|
| **Primigravida** | 12 | 24 |
| **G2** | 13 | 26 |
| **G3** | 6 | 12 |
| **G4** | 2 | 4 |
| **G2A1/G3A2** | 13 | 26 |
| **Bad obstetric history** | 4 | 8 |

In this study, a higher percentage of hypothyroidism was found in G2 (26%) followed by primigravida (24%), G3 (12%), >G4 (4%), and 26% patients had previous history of abortion

### *Period of gestation*

Among the 50 antenatal patients, 28 patients (56%) delivered between 38-40 weeks, 11 patients (22%) delivered >40 weeks, 11 patients (22%) delivered before the 37 weeks.

**Table 2: Period of gestation.**

| Period of gestation (Weeks) | No. of cases | Percentage (%) |
|---|---|---|
| **<37** | 11 | 22 |
| **38-40** | 28 | 56 |
| **>40** | 11 | 22 |

### *Mode of delivery*

In this study, 58% patients had full term vaginal delivery, 34 % patients underwent caserean section, 8% patients had preterm vaginal delivery.

**Table 3: Mode of delivery.**

| Mode of delivery | No. of cases | Percentage (%) |
|---|---|---|
| **Full term vaginal delivery** | 29 | 58 |
| **LSCS** | 34 | 34 |
| **Preterm vaginal delivery** | 8 | 8 |

### *Birth weight of baby*

In this study, 56% babies had birth weight between 2501-3000 gm, 32% had low birth weight (<2500 gm), 8% babies had birth weight between 3501-400 gm, 4% babies had birth weight >4000 gm.[1]

**Table 4: Birth weight.**

| Birth weight (gm) | No. of cases | Percentage (%) |
|---|---|---|
| **Less than or equal to 2500** | 16 | 32 |
| **2501-3000** | 28 | 56 |
| **3001-4000** | 4 | 8 |
| **>4001** | 2 | 4 |

### *NICU admission with hypothyroidism*

In this study, 32% babies required NICU admission due to various reasons, 68% babies did not require NICU admission.

**Table 5: NICU admission.**

| NICU admission required | No. of cases | Percentage (%) |
|---|---|---|
| **Yes** | 16 | 32 |
| **No** | 34 | 68 |

**Table 6: Co-morbidities with hypothyroidism.**

| Co-morbidities | No. of cases | Percentage (%) |
|---|---|---|
| **Anemia** | 10 | 20 |
| **Pre-eclampsia** | 12 | 24 |
| **Polyhydramnios** | 6 | 12 |
| **Neonatal death** | 2 | 4 |

### *Co-morbidities with hypothyroidism*

Among 50 antenatal patients with hypothyroidism, anemia was observed in 20% patients, pre-eclmapsia was observed

in 24% patients, polyhydramnios in 12% patients, neonatal death in 4% patients.

## DISCUSSION

In our study, higher percentage of hypothyroidism was found in G2 (26%) followed by primigravida (24%), G3 (12%), >G4 (4%) and 26% patients had previous history of abortion. Similar results were found in a study conducted by Mahadik et al where the prevalence of abortions was found to be high.[2]

Among 50 antenatal patients, 28 patients (56%) delivered between 38-40 weeks, 11 patients (22%) delivered >40 weeks, 11 patients (22%) delivered before 37 weeks (preterm). In a study conducted by Korevaar et al the preterm delivery risk was found to be 6.1%.[4]

In this study, 32% babies required NICU admission due to various reasons, 68% babies did not require NICU admission. Similar results were found in a study conducted by Mahadik et al where the rate of NICU admission was 42.1%.[2]

In this study, 56% babies had birth weight between 2501-3000 gm, 32% had low birth weight (<2500 gm), 8% babies had birth weight between 3501-400 gm, 4% babies had birth weight >4000 gm. Similar results were found in a study conducted by Mahadik et al where low birth weight was found in 31.6% patients.[2]

In this study, 58% patients had full term vaginal delivery, 34% patients underwent caserean section, 8% patients had preterm vaginal delivery. Similar results were found in a study conducted by Kiran et al where the emergency cesarean section occurred in 23.4% of cases.[3]

Among 50 antenatal patients with hypothyroidism, anemia was observed in 20% patients, pre-eclmapsia was observed in 24% patients, polyhydramnios in 12% patients, neonatal death in 4% patients. Similar results were found in a study conducted by Mahadik et al where anemia was found in 26.3 patients.[2]

### *Limitations*

This study being the neurocognitive function of babies could not be studied in detail due to lost to follow up of patients. All laboratory parameters should be studied to come to a diagnosis.

## CONCLUSION

Hypothyroidism is a common health problem in antenatal patients. We concluded that hypothyroidism is more commonly seen to be associated with low birth weight, anemia, pre-eclampsia, NICU admission in neonate. Early ANC registration and regular ANC checkups help in early recognition and initiating early treatment, thus improving fetomaternal outcome.

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