Prevalence and Maternal Effects of Hypothyroidism in Pregnancy

Abstract

**Background:** Thyroid disorders are among the common endocrine problems in pregnant women. It is now well established that not only overt but subclinical thyroid dysfunction also has adverse effects on maternal and fetal outcome. There are few data from Bangladesh about the prevalence of thyroid dysfunction in pregnancy. With this background, this study aims to find prevalence of thyroid dysfunction in pregnancy and its impact on obstetrical outcome.

**Materials and methods:** It is an observational study done in a Combined Military Hospital (CMH) Chattogram during the period from February to December 2020 on 130 hypothyroid mothers to observe maternal effects of hypothyroidism. Patients were collected as per inclusion and exclusion criteria after informed written consent. Data was compiled and analyzed and presented.

**Results:** Among 1148 total patients, 1018 (89%) were normal and 130 (11%) were diagnosed as hypothyroid. Among all the patients, 35% patients are from inside the Chattogram and 65% are from outside. Among 130 hypothyroid cases age range revealed 20-45 years and 20 -30 years age group were 82 (63.07%), 30-40 years age group was 40 (30.76%) and >40 years age group were 8 (6.15%). Primigravida was 48 (36.92%) cases and multigravida was 82 (63.08%) cases, anemia was present in 40 (30.76%) cases, 10 (7.69%) patients had hypertension, GDM and DM was found in 20 (15.38%) and 3 (2.30%) cases respectively, preconception hypothyroidism was found in 10 (7.69%) and on Levothyroxine during ANC was 120 (92.30%). Among all, 63 (48.46%) cases were underwent vaginal delivery and 67 (51.53%) cases underwent cesarean section. Untreated and irregular treatment in hypothyroidism are associated with pregnancy complications like spontaneous miscarriage 40 (30.76%), maternal anaemia 55 (42.30%), pre-eclampsia 4 (3.07%), pre term birth 16 (12.30%), postpartum haemorrhage 3 (2.30%).

**Conclusion:** Hypothyroidism is a common clinical condition during pregnancy and it causes variable pregnancy outcome

**Key words:** Hypothyroidism; Outcome; Pregnancy.

**INTRODUCTION**

Development of maternal thyroid disorders during early pregnancy can influence the pregnancy outcome and fetal development. Thyroid dysfunction can lead to premature birth, pregnancy induced hypertension, low birth weight infants, IUGR, abruptio placenta and increased fetal mortality. Sahu MT et al studied 633 women in second trimester. In their study the prevalence of thyroid disorders was also 12.7%. Maternal hypothyroidism in the first trimester may be harmful for the fetal brain development lead to mental retardation. In view of potential adverse outcomes
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Table I: General clinical features

| Features | Number | Percent (%) |
|----------|--------|-------------|
| Age range 20-45 years | 130 | 100% |
| 20-30 years | 82 | 63.07% |
| 30-40 years | 40 | 30.76% |
| >40 years | 8 | 6.15% |
| Primigravida | 48 | 36.92% |
| Multigravida | 82 | 63.08% |
| Anemia | 40 | 30.76% |
| Hypertension | 10 | 7.69% |
| GDM | 20 | 15.38% |
| DM | 3 | 2.30% |
| Preconception hypothyroidism | 10 | 7.69% |
| On Levothyroxine ANC | 120 | 92.30% |
| Regular ANC checkup | 102 | 78.46% |
| Irregular ANC checkup | 28 | 21.52% |

RESULTS

Among 1148 total patients 1018(89%) were normal and 130(11%) were diagnosed as hypothyroid. Among the 35% patients from inside the Chattogram and 65% from outside (Figure 1 & 2).

Figure 2: Prevalence of hypothyroidism according to locality

Among all 130 cases of hypothyroidism age range was 20-45 years and 20-30 years age group were 82(63.07%), 30-40 years age group was 40(30.76%) and >40 years age group were 8(6.15%). Primigravida was 48(36.92%) cases and multigravida was 82(63.08%) cases, anemia was present in 40(30.76%) cases, 10(7.69%) patients had hypertension, GDM was found in 20(15.38%) cases and DM was found in 3(2.30%) cases, preconception hypothyroidism was found in 10(7.69%) and on Levothyroxine ANC was 120(92.30%) (Table I).

Figure 3: Mode of delivery

Among all 63(48.46%) cases were undergone vaginal delivery and 67(51.53%) cases underwent cesarean section (Figure 3).
Untreated and irregular treatment in hypothyroidism is associated with pregnancy complications like spontaneous miscarriage 40(30.76%), maternal anaemia 55(42.30%), pre-eclampsia 4(3.07%), pre-term birth 16(12.30%), postpartum haemorrhage 3(2.30%).

Table II: Pregnancy complications

| Complications               | Number | Percents  |
|-----------------------------|--------|-----------|
| Spontaneous miscarriage     | 40     | 30.76%    |
| Maternal anaemia            | 55     | 42.30%    |
| Preeclampsia                | 4      | 3.07%     |
| Preterm birth               | 16     | 12.30%    |
| Postpartum hemorrhage       | 3      | 2.30%     |

DISCUSSION

Among 1148 total patients 1018(89%) were normal and 130(11%) were diagnosed as hypothyroid. In 2010 Sahu, Meenakshi Titoria et al, screened 633 pregnant women in second trimester. TSH level estimated. If TSH level was deranged, then free T4 and Thyroperoxidase antibody level were done. Patients were managed accordingly and followed till delivery. Their obstetrical and perinatal outcomes were noted. Their results showed that prevalence of thyroid dysfunction was high in this study, with subclinical hypothyroidism in 6.47% and overt hypothyroidism in 4.58% women.

Among all 130 cases of hypothyroidism age range was 20-45 years and 20-30 years age group was 82(63.07%), 30-40 years age group was 40(30.76%) and >40 years age group were 8(6.15%). Primigravida was 48(36.92%) cases and multigravida was 82(63.08%) cases, anemia was present in 40(30.76%) cases, 10(7.69%) patients had hypertension, GDM was found in 20(15.38%) cases and DM was found in 3(2.30%) cases, preconception hypothyroidism was found in 10(7.69%) and on Levothyroxine ANC was 120(92.30%). In 1998, a study was done by Leung AS et al Losangeles. A cohort of 68 hypothyroid patients with no other medical illness were divided in to two groups according to thyroid function tests. The first one had 23 women with overt hypothyroidism and the second 45 women with subclinical hypothyroidism. They sought to identify the pregnancy outcomes. Gestational hypertension namely eclampsia, pre-eclampsia and pregnancy induced hypertension was significantly more in overt and subclinical hypothyroidism patients in the general population with rates of 22.15 and 7.6% respectively. In addition 36% of the overt, and 25% of the subclinical hypothyroid subjects, who remained hypothyroid at delivery developed gestational hypertension, Except for one still birth and one case of club feet. Hypothyroidism was not associated with adverse fetal and neonatal outcome.

Among all 63(48.46%) cases were undergone vaginal delivery and 67(51.53%) cases underwent cesarean section. Untreated and irregular treatment in hypothyroidism is associated with pregnancy complications like spontaneous miscarriage 40(30.76%) maternal anaemia 55(42.30%) pre-eclampsia 4(3.07%) pre-term birth 16(12.30%) postpartum hemorrhage 3(2.30%). In a recent publication in Sharma PP et al titled Hypothyroidism and Pregnancy the publication reports that in Hypothyroid women who become pregnant also carry an increased risk for obstetrical complications such as IUD, pregnancy induced hypertension, abruptio placenta and increase in perinatal mortality. There is also recent evidence for long lasting psychoneurological impairment in the progeny. In a study done by Leung et al, the incidence of complications were PE(22%), LBW (22%), SB(4%) in cases of overt hypothyroidism. In a study done by Abolovich et al the complications like AP (19%), LBW (6%), SB(3%) were seen in cases of overt hypothyroidism. The incidence of complications varied in different studies but some studies are comparable. In our study the incidence of abortion (11.8%) which is significant is not seen in other studies.

CONCLUSION

Prevalence of thyroid disorders, especially subclinical hypothyroidism and overt hypothyroidism was high. Adverse effects on maternal and fetal outcome were seen emphasizing the importance of routine antenatal thyroid screening.

DISCLOSURE

All the authors declared no competing interest.
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