

Hypothyroidism and Pregnancy outcome

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ABSTRACT---

Objective: To evaluate maternal and perinatal outcomes among ladies treated for hypothyroidism in pregnancy at antenatal clinics of King Hussein Medical Centre.

Methods: This study was conducted at antenatal clinics of King Hussein medical center during the period from April 2018 to April 2020. We studied 200 pregnant women with hypothyroidism as a study group (group I) who were compared to 200 euthyroid pregnant women as a control group (group II).

Results: The incidence of obstetric complications in group I vs group II found to be as the followings: Pre-eclampsia 12%(24) vs 9%(18), miscarriage 10%(20) vs 4%(8), while preterm labor was 20%(40) vs 22%(44), the antepartum hemorrhage 5%(10) vs 4%(8), Post-partum hemorrhage 7%(14) vs 5%(10) respectively.

There were no significant statistical differences in these outcomes in both groups and preterm labor pain was the most frequent pregnancy complication encountered (20% vs, 22 %)

Conclusion: Proper treatment of hypothyroid patients before pregnancy and throughout pregnancy would probably eliminate the potential risk of developing maternal and fetal complications, treated hypothyroid patients hold no significant differences in pregnancy-related complications once compared to euthyroid women.

Keywords--- Hypothyroidism, Pregnancy, Outcome

1. INTRODUCTION

Thyroid hormones optimization before falling pregnant is very crucial particularly in ladies with history of thyroid disorders, as normal concentration of thyroid hormones during pregnancy is very essential for maternal health status and wellbeing as well as fetal growth, and development.

hypothyroidism in terms of incidence has a wide ethnic and geographic variation with a frequent incidence of 2.5% in the medical literature. (1,2,3)

The common causes of hypothyroidism are autoimmune thyroiditis, radio-iodine therapy, and thyroid surgery, but medications and rare genetic disorders may cause hypothyroidism but to a lesser extent. Hypothyroidism if not treated in pregnancy will have a negative impact on obstetric outcomes particularly on the incidence of pre-eclampsia, miscarriage, preterm labor, antepartum hemorrhage, Post-partum hemorrhage and caesarian section rate as well as other many complications. The presence of thyroid antibodies indicates that hypothyroidism is being caused by chronic autoimmune thyroiditis. Overt hypothyroidism is diagnosed by laboratory blood testing and it manifests as low concentrations of circulating thyroid hormones with raised concentrations of TSH.

Subclinical hypothyroidism is diagnosed when TSH concentrations are raised but thyroid hormone concentrations are still within normal range. Thyroid dysfunction can potentially affect obstetric and perinatal outcomes, causing abortion, intrauterine growth restriction, pre-eclampsia, fetal distress, stillbirths, preterm delivery, peri-partum hemorrhage, and influence neonatal outcome, including long-term adverse effects on neurodevelopment. (4-7)

This study was conducted at antenatal clinics of King Hussein medical center during the period from April 2018 to April 2020 to evaluate perinatal outcomes of treated hypothyroidism in pregnancy.

2. MATERIALS AND METHODS

A retrospective study was conducted after getting the ethical approval at antenatal clinics of King Hussein medical center during the period from April 2018 to April 2020, patients were divided into two groups. Group I which included 200 pregnant women with pre-conceptional hypothyroidism who were taken as a study group. The inclusion criterion was set to include: hypothyroid pregnant women on thyroid replacement therapy pre-conceptional with TSH level kept less than 2.5 mU/l and with a range of 0.1-2.5 mU/l all through pregnancy, age less than 35, spontaneous pregnancy, and doesn't have any other associated medical illness.

The diagnosis of hypothyroidism was based on clinical findings as well as abnormal thyroid function tests (serum TSH, free T4, free T3) but the serum levels of thyroid-stimulating hormone (TSH) were mainly taken into consideration for monitoring and to consider the patient as euthyroid, thyroid hormone levels were in the normal range throughout pregnancy and this was achieved by titrating the Levo-thyroxine medication during the patient visit to the antenatal clinic.

The inclusion criteria is the same in the control group except that the pregnant ladies included were not previously had hypothyroidism or receiving thyroid treatment and had normal baseline thyroid hormones level at time of booking visit.

The result of obstetrics outcomes in the hypothyroid (group I) patients compared with the (group II) 200 matched euthyroid pregnant women who were taken as a control group.

The obstetrics outcomes studied include preterm labor, preeclampsia, miscarriage, antepartum hemorrhage, post-partum hemorrhage, caesarian section rate

Data were collected and analyzed to compare the difference in obstetrics outcome between both groups (hypothyroid vs euthyroid).

3. RESULTS

The mean age of patients in group I and II was 29 years and 31 years respectively, all women in the group I of our study were treated with Levo-Thyroxine pre-conceptional and during pregnancy.

All of our patients in group I were known to have pre-conceptional hypothyroidism and had optimized TSH levels checked before falling pregnant., whereas TSH levels were measured every 4 weeks and the dose of Levo-Thyroxine was adjusted accordingly to optimize TSH level. Primary hypothyroidism found to be the main underlying cause, consisting of 90% (180/200) of the hypothyroid patients in our studied group, and the majority of these cases were due to an autoimmune etiology

In our study we analyzed and recorded the major pregnancy outcomes (Table 1) which included; Preeclampsia, antepartum hemorrhage, miscarriage, Preterm labor, post-partum hemorrhage, and caesarian section rate. The incidence of obstetric complications in group I vs group II found to be as the followings: for pre-eclampsia 12%(24) vs 9%(18), for miscarriage 10%(20) vs 4%(8), For preterm labor 20%(40) vs 22%(44), for the antepartum hemorrhage 5%(10) vs 4%(8), for Post-partum hemorrhage 7%(14) vs 5%(10) respectively.

In group I Preterm labor was the most frequent complication encountered 20%(40) followed by Pre-eclampsia 12%(24) but they did not reach a significant statistical difference.

The incidence of preeclampsia in both groups was found to be relatively high in our study and this was justified as 45%(90/200) of the patients enrolled in this study were primigravidae but there is no significant statistical difference between the two groups.

Caesarian section rate found to be 40%(80/200) in group I while it was 38%(76/200) in the control group, in both groups there was no significant statistical difference, in both groups it showed a higher incidence of caesarian section rate relatively and this can be explained by the increasing number of primigravidae enrolled in our study.

In conclusion, if the hypothyroid patient well treated and optimization of thyroid hormones is achieved and closely monitored, there were no significant statistical differences between both groups in terms of obstetric outcomes.

Table 1: Maternal adverse outcomes

Adverse outcome	Study group	Control group
	(n=200)	(n=200)
Preterm labor	20%(40)	22%(44)
Preeclampsia	12%(24)	9 %(18)
Miscarriage	10%(20)	4%(8)
Antepartum hemorrhage	5%(10)	4%(8)
Post-partum hemorrhage	7%(14)	5%(10)
Caesarian section rate	40%(80)	38%(76)+

4. DISCUSSION

Maternal hypothyroidism is the most frequent disorder of thyroid disorders in pregnancy and has been associated with both maternal and fetal complications; pre-eclampsia, antepartum hemorrhage, miscarriage, Preterm labor, post-partum hemorrhage, and fetal loss.

These complications have been associated with overt hypothyroidism (high TSH and low free T4 level) in 0.2% of pregnancies in addition to subclinical hypothyroidism (high serum TSH and normal free T4 level) which is observed in about 2.3-2.5% of pregnancies. (8-10)

Our study was directed to assess the impact of hypothyroid treatment in pregnancy because a sizable number of women who suffer from thyroid dysfunction are not diagnosed or insufficiently treated before and during pregnancy, and its negative impact on the pregnancy outcome is a very debatable issue and it is worth studying. (3,7,11-14)

Other studies had shown previously an increase in the prevalence of congenital abnormalities (10-20%), perinatal mortality (20%), impaired intellectual and physical development (50-60%) in offspring of untreated hypothyroid patients. Still, there is a rise in the prevalence of maternal complications in treated hypothyroid pregnant patients like anemia (31%), hypertensive disorders in pregnancy (44%), placental abruptio (19%), post-partum hemorrhage (19%), and adverse fetal outcomes like low birth weight (LBW) (31%), and fetal loss (12%), have been observed. (15).

If we search meticulously in these complications which were reported in hypothyroid pregnant women, we can conclude that patients were neither adequately treated nor ideally monitored, and hence we can understand the contradiction. (9,11)

Hypothyroid patients receiving an optimal and adjusted dose of thyroxine, throughout pregnancy would expect better obstetric outcomes than in those who started thyroxine after the first trimester. (11)

Optimizing the thyroid hormones before falling pregnant and throughout pregnancy is very essential to avoid both maternal and fetal complications like increase incidence of preterm labor, miscarriage, and pre-eclampsia as well as possible fetal neural maldevelopment. (16,17)

In our studied group Preterm labor was the most frequent complication encountered 20% followed by Pre-eclampsia 12% but they did not reach a significant statistical difference when compared to the control group. Incidence of preeclampsia in both groups was found to be relatively high in our study and this was justified as 45% of the patients enrolled in this study were primigravidae but when we compared this result with the control group there is no significant difference between the two groups 40% vs 38%.

Other adverse outcomes observed were miscarriage 10%, the antepartum hemorrhage 5%, Post-partum hemorrhage 7%.

In conclusion, no significant statistical difference in maternal complications were noted between the studied group(group I) and the control group (group II) .

The findings of our study are supported by the research of Albovich et al, who observed that adequate and optimal treatment of hypothyroid patients during pregnancy minimizes the adverse outcomes, and generally speaking it would be possible for pregnancies to be completed without further risk of potential complications. (9,17)

Caesarian section rate was found to be 40%(80/200) in group I while it was 38%(76/200) in the control group, in both groups there was no significant statistical difference.

In both groups, it showed a higher incidence of caesarian section rate relatively but they have comparable rates and this can be explained by the increased number of primigravidae enrolled in our study in both groups.

Idris I, Srinivasan R, Simm A et al, observed higher cesarean section rate among hypothyroid patients, similarly, Shai Matalon et al observed that patients with hypothyroidism had high rates of cesarean sections, the possible explanation for high rates of cesarean sections that there is associated placental changes associated with thyroid dysfunction which indicates ideal intrapartum observation and monitoring. (18,19)

5. CONCLUSION

Adequately treated hypothyroid women who received an adjusted dose of thyroxine replacement and managed to have optimal TSH levels hold no significant differences in pregnancy-related complications once compared to euthyroid women.

Our study emphasizes on early optimization of thyroid function before falling pregnant and to continue a properly adjusted dose of thyroxine throughout pregnancy in addition to ideal intrapartum fetal monitoring, and that would probably eliminate the potential risk of adverse maternal and fetal outcomes associated with hypothyroidism in pregnancy.

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