

SCREENING AND MANAGEMENT OF ENDOCRINE DISORDERS DURING PREGNANCY

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Abstract- This prospective observational study was Maternal thyroid hormone deficiency is common in pregnancy. Hypothyroidism during pregnancy is associated with several adverse outcomes, including gestational hypertension, miscarriage, placental abruption, premature birth, fetal growth retardation, and impaired neuropsychological development of the offspring. Gestational hypertension is a form of high blood pressure in pregnancy. It occurs in about 6 percent of all pregnancies.

1.INTRODUCTION:

Maternal thyroid hormone deficiency is common in pregnancy. Hypothyroidism during pregnancy is associated with several adverse outcomes, including gestational hypertension, miscarriage, placental abruption, premature birth, foetal growth retardation, and impaired neuropsychological development of the offspring [1],

Thyroid disease is the second most common endocrine disorder after diabetes in pregnancy. Thyroid disease poses a substantial challenge on the physiology of pregnant women and has significant maternal and fetal implications. Research shows that during pregnancy, the thyroid gland's size increases by 10% in countries with adequate iodine stores and by approximately 20% to 40% in countries with iodine deficiency. During pregnancy, thyroid hormone production increases by around 50% along with a similar increase in total daily iodine requirements. Thyroid dysfunction in pregnant women including hypothyroidism and hyperthyroidism requires close monitoring and treatment as warranted. [2]

The foetus is dependent on maternal trans-placental thyroid hormone supply in the first trimester. This, along with other factors, leads to an increased thyroid hormone demand during pregnancy. To meet the increased demands, the thyroid hormone production increases by 50%.

Hypothyroidism during pregnancy is associated with several adverse outcomes, including gestational hypertension, miscarriage, placental abruption, premature birth, foetal growth retardation, and impaired neuropsychological development of the offspring.

GESTATIONAL DIABETES

INTRODUCTION

Diabetes is a condition in which the body can't make enough insulin, or can't use insulin normally. Insulin is a hormone. It helps sugar (glucose) in the blood get into cells of the body to be used as fuel. When glucose can't enter the cells, it builds up in the blood. This leads to high blood sugar (hyperglycemia).

Diabetes is a common metabolic complication of pregnancy and affected women fall into two subgroups: women with pre-existing diabetes and those with gestational diabetes mellitus (GDM). [3],

GESTATIONAL HYPERTENSION

INTRODUCTION

Gestational hypertension is a form of high blood pressure in pregnancy. It occurs in about 6 percent of all pregnancies. Another type of high blood pressure is chronic hypertension--high blood pressure that is present before pregnancy begins.

Hypertensive disorders of pregnancy, an umbrella term that includes preexisting and gestational hypertension, preeclampsia, and eclampsia, complicate up to 10% of pregnancies and represent a significant cause of maternal and perinatal morbidity and mortality. (Braunthal, 2019) [4], Chronic hypertension can mimic gestational hypertension and strongly predisposes to superimposed pre-eclampsia. Gestational hypertension is often benign but may also be an early stage in the development of pre-eclampsia.

2.AIM AND OBJECTIVES:

AIM:

To study the presence of hypothyroidism, diabetes and hypertension among pregnant women.

OBJECTIVES:

- To evaluate the hypothyroidism, diabetes and hypertension during pregnancy.
- To study the levels of hypothyroidism, measuring blood glucose levels and monitoring levels of blood pressure among pregnant women.
- To evaluate and advise the drugs and dosage for hypothyroidism, diabetes and hypertension based on severity.

MATERIALS

- Data Collection form – It is used to collect the information about the patient
- Informed Consent form – It is used to take approval of the patient for study
- Questionnaire
- Patient information sheet
- Plan of work – It explains the study procedure in detail.

METHODS:

- **Study site:** The study was carried out in department of Obstetrics and Gynecology at Malla Reddy hospital, Suraram, Hyderabad, Telangana.
- **Study design:** Prospective cross sectional Observational study
- **Sample size:** 100 patients

Study period: The study was carried out for a period of 6 months February – July 2023

STUDY CRITERIA:**INCLUSION CRITERIA**

- Above 18 years of age
- Pregnant women
- Pregnant women diagnosed with hypothyroidism, diabetes and hypertension.

EXCLUSION CRITERIA

- Pregnant women without hypothyroidism
- Pregnant women without diabetes and hypertension
- Less than 18 years of age.

STATISTICAL METHOD USED - Simple Mean Method

Chi square test

STUDY PROCEDURE:**SUBJECT COLLECTION:**

- This prospective cross-sectional study was conducted in Malla Reddy Hospital, Hyderabad from February 2023 - July 2023 for 6 months period
- The subjects were selected for study based on inclusion criteria - female patients aged above 18 years and those diagnosed with hypothyroidism, diabetes and hypertension.
- The subjects - males, females without hypothyroidism, diabetes and hypertension were excluded from study.
- The study procedure was explained to the subjects and a written consent was obtained from them. Confidentiality of data was assured to the patient.
- Subjects consent was taken and the study was performed.

DATA COLLECTION:

- Basic information was obtained from the patients, (like the present age, weight, medical history, medication history, are taken and recorded.
- We correlated the parameters in a sample and detected the percentage of occurrence of each parameter in overall endocrine disorders such as hypothyroidism, diabetes and hypertension.

3.RESULTS

- **Age wise distribution:** Highest number of subjects 81% were found in age group 21 – 30 years followed by 16% of the subjects in age group 10-20 years, lowest 3% in between 10-20 years. (TABLE:1)
- **Body weight wise Distribution:** Most of the cases 40% were of body weight group 61– 70 kg, Least cases 4% were from weight group 81 – 90 kg, 28% were found in between weight group 51-60 kg, 22% in between 71-80 kg, 6% of the subjects from 41-50 kg (TABLE:2)
- **Prevalence of known cases of hypothyroidism and not-known cases of hypothyroidism in study population:** The analysis of hypothyroidism and not-known cases of hypothyroidism in study population. with the study of 100 patients, a significant percentage of Known cases of hypothyroidism are in majority 78% of the cases and Not Known cases of hypothyroidism 22% of case.(Table:3)

- **T3 ,T4.TSH values distribution:** The majority of the population 59% have a T3 range of 0.9-1.5 ng/ml followed by 28% of study population having 1.6-2.0 ng/ml
- Only 13% had a T3 range of >2.1 ng/ml. population 76% have a T4 range of 11-15 ug/dl followed by 14% of study population having >15 ug/dl ,Only 10% had a T4 range of <10 ug/dl. population 48% have a TSH range of <2.0 miU/ml followed by 35% of study population having 2.1-4.5 miU/ml, Only 17% had a TSH range of >4.5 miU/ml(TABLE-5,6,7)
- **Medication used for hypothyroidism:** The majority of the population 47% are using Thyronorm ≥ 75 mcg followed by 41% of study population using Thyronorm 50-74 mcg. Around 12% of the population are using Thyronorm ≤ 25 mcg.(TABLE-8)
- **Hypertension among study population:** 97% of the study population did not have diabetes while 3% of the study population had diabetes.

Distribution of population with Endocrine Disorders: Majority of the population 78% had hypothyroidism 11% had Gestational Diabetes while 3% had Gestational hypertension.

4.DISCUSSION

- Maternal hypothyroidism is a disorder with great potential to adversely affect maternal and fetal outcomes and is also associated with multiple other conditions which can affect maternal and fetal health.
- A Observational study was conducted on 100 pregnant women selected bases on inclusion and exclusion 78% showed hypothyroidism, 11% showed gestational diabetes mellitus and 3% showed gestational hypertension
- In comparsion to other studies the current study had a accurate sample design with sample coming from a single hospital.
- In similarity to a conduct by Disha A.Rajput [5], having the thyroid disorder in the study 14.2%
- The most of the population 59% had a T3 range of 0.9-1.5 ng/ml. 76% had a T4 range of 11-15 ug/dl.
- In similarity to a conduct by Monika et.al, [the present study too had a 70% presence of hypothyroidism among the patients. In similarity to a conduct by Kidus Kebede Abadi [6],, the present study too had a 91% presence of hypothyroidism among the patients.
- In this study, the majority of the population had 48%TSH > 4.5 miU/ml.
- Around 47% of the study population are using Thyronorm ≥ 75 mcg followed by 41% of study population using Thyronorm 50-74 mcg. Around 12% of the population are using Thyronorm ≤ 25 mcg.
- In similarity to a conduct by Alfadhi Emet [7],al the study of Gestational Diabetes39.4% in women. the present study too had a 11% Gestational Diabetes
- In similarity to a conduct by Nath[8], the study of hypertension they been observer that 12%in women
- By comparative study we found 11% Gestational Diabetes. In similarity to conduct by Robert L Golenberg[9],the study in gestational Diabetes in pregnancy is affect 17% in pregnant women,
- In similarity to conduct by G Avalos [10],the study in gestational hypertension in pregnancy is affect 12.4% in pregnant women, by comparative we found 3% of population having gestational hypertension.
- Among 100 population we analyzed for comorbid conditions in hypothyroidism with hypertension was seen in 3% of the study population had hypertension, and1% had Gestational Diabetes.
- In hypothyroidism in pregnant can be managed by life style modifications such as Maintaining a Healthy weight, well balanced diet rich in fruits and vegetables and whole grains.

5.CONCLUSION

- Maternal hypothyroidism is a disorder with great potential to adversely affect maternal and fetal outcomes and is also associated with multiple other conditions which can affect maternal and fetal health.
- In this study, out of 100 pregnant women **78% showed hypothyroidism**, **11%** showed gestational diabetes mellitus and **3%** showed gestational hypertension.
- The **most** of the population 59% had a **T3 range of 0.9-1.5 ng/ml**. 76% had a **T4 range of 11-15 ug/dl**.
- In this study, the majority of the population had TSH > 4.5 miU/ml.
- Around 47% of the study population are using Thyronorm ≥ 75 mcg followed by 41% of study population using Thyronorm 50-74 mcg. Around 12% of the population are using Thyronorm ≤ 25 mcg.
- It was observed that majority of the population 80% have their Random Plasma Glucose value <110 mg/dl followed by 11% of study population with their Random Plasma Glucose >140 mg/dl.
- Only 9% had a Random Plasma Glucose range of $>110-140$ mg/dl
- We observed that 97% of the study population did not have hypertension while 3% of the study population had hypertension.

- In distribution of population with endocrine disorder, it was observed that majority of the population 78% had hypothyroidism 11% had Gestational Diabetes while 3% had Gestational hypertension.

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