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RESEARCH ARTICLE
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HYPOTHYROIDISM IN PREGNANCY

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Abstract:

Back ground: Pregnancy is a period that places great physiological stress on both the mother and the fetus. When pregnancy is compounded by endocrine disorders such as hypothyroidism, the potential for maternal and fetal adverse outcomes can be immense.

Setting: This prospective observational study was conducted in Obstetrics & Gynaecology department of MKCG Medical College, Berhampur, Odisha.

Aim: To study the maternal-fetal outcome and complications during pregnancy, labor and post-partum period presents a special importance in present day obstetrics in hypothyroidism**.**

Observation: Present study showed that there is significant association between thyroid disorders and adverse perinatal outcome

Conclusion: Prompt diagnosis and treatment of hypothyroidism in pregnancy is very essential. Subclinical hypothyroidism also needs to be detected and treated to prevent adverse outcomes, especially maternal. Post-partum follow-up is mandatory. Recent evidence seems to indicate that universal screening might be a better option.

Keywords: Hypothyroidism, pregnancy, subclinical hypothyroidism, targeted screening, universal screening

INTRODUCTION

Pregnancy is a period that places great physiological stress on both the mother and the fetus in the best of times. However, if pregnancy is compounded by endocrine disorders such as hypothyroidism, the potential for maternal and fetal adverse outcomes can be immense. Hypothyroidism is widely prevalent in pregnant women and the rate of detection, especially in a developing country like India, has not kept pace with the magnitude of the problem. Since hypothyroidism is easily treated, timely detection and treatment of the disorder could reduce the burden of adverse fetal and maternal outcomes, which are very commonly encountered. Moreover, hormonal changes and metabolic needs during pregnancy result in profound alterations of biochemical and clinical parameters which

characterize the thyroid gland, changes that express themselves through a state of thyroid hyperstimulation and a relative hy pothyroxinemy or a subclinic hypothyroidism, a limiting form between normality and pathology, but nevertheless closer to the pathology during pregnancy. [1,2]. When pregnancy overlaps maternal endocrine imbalance, undesirable consequences for both mother and fetus may appear. It is acknowledged that hypothyroidism in pregnancy is associated with an increased risk of abortion, habitual abortion, premature delivery, intrauterine fetal death, fetal retardation and fetal congenital anomalies, congenital hypothyroidism, postpartum bleeding, anemia, post-partum depression and cardiac dysfunction, which leads to increased maternal morbidity, perinatal morbidity and mortality. [3-5]. These alterations of thyroid function take place throughout gestation, help to prepare the maternal thyroid gland to cope with the metabolic demands of pregnancy, are reversible post-partum and the interpretation of these changes can pose a challenge to the treating physician. The most notable change is the increase in thyroxinebinding globulin (TBG). This begins early in the first trimester, plateaus during midgestation, and persists until shortly after delivery. This is due to stimulation of TBG synthesis by elevated maternal estrogen levels, and more importantly, due to a reduced hepatic clearance of TBG because of estrogen-induced sialylation.[6] This increased TBG concentration leads to an expansion of the extrathyroidal pool and results in elevated total T3 and T4 levels due to an increase in maternal thyroid hormone synthesis. Maternal thyroid hormone synthesis is also increased due to an accelerated renal clearance of iodide resulting from the increased maternal glomerular filtration rate. Enhanced metabolism of T4 in the second and third trimesters, due to a rise in placental type II and type III deiodinases, which convert T4 to T3 and T4 to reverse T3 and T2 respectively, act as further impetus to T4 synthesis. Plasma iodide levels decrease due to both increased thyroxine metabolism and increased renal iodide clearance. All these changes lead to an increase in the size of the thyroid gland in 15% of pregnant women, which returns to normal in the post-partum period. Serum hCG has intrinsic thyrotropic activity, which increases after fertilization and peaks at 10 to 12 weeks. Hence, in the first trimester**,** free T3 and T4 levels increase slightly and TSH levels decrease in the first trimester with a readjustment in the second and third trimesters, when hCG levels decrease. As a consequence, cut-offs to determine hypothyroidism in pregnancy are different in the first trimester and the rest of the pregnancy[7]

AIM OF THE STUDY

To study the maternal-fetal outcome and complications during pregnancy, labor and post-partum period presents a special importance in present day obstetrics in hypothyroidism.

MATERIAL AND METHOD

This study was conducted in MKCG Medical College, Berhampur, Odisaha, India from January 2019 to January 2020. The antenatal patients attending the out patients department were universally screened. A total of 1600 patients were screened during the study period and they were followed up for maternal outcomes and fetal outcomes during the antenatal, intranatal and postnatal periods. The criteria of inclusion in the study were represented by the diagnosis of hypothyroidism given by the obstetrician and endocrinologist and the detection of the hormonal profile through lab tests.

The criteria of exclusion from the study are multiple: prophylaxis with iodine, the presence of thyroid nodules at the echographic examination, the existence of a child birth in a period less than 12-18 months, other major medical problems which can interfere with the thyroid status, chronic medication which contains iodine, hepatitis history or HIV congenital anomalies, refuse of giving formal consent, history of surgical intervention which needed local painting with iodine. The “t Student” test, which is a common test in biology and medicine, was used in order to perform the statistical calculations in order to establish the various correlations.

OBSERVATIONS

Out of 1600 patients screened, 136 number of patients were labelled as hypothyroidism by laboratory parameters and clinical examinations. The incidence was 8.5% in the present study. The distribution of age and parity showed the maximum patients were nulliparous and of age group 20-25 years. Four cases developed spontaneous abortion followed by suction and evacuation. Normal delivery occurred in maximum number of cases and caesarian section was needed in 23.52% cases. IUGR and low birth weight babies wer delivered in 40 cases. Two cases developed intrauterine fetal death and one case resulted in neonatal death. APGAR score was normal in 110 cases and it was low in 23 cases and 11 cases got admitted in SNCU/NICU. Labour abnormalities as hypokinesia, hypotonia, postpartum depression, postpartum thyroidism , postpartum haemorrhage were the common maternal complecations.[Table 1-5]

Table 1: DISTRIBUTION OF AGE AND PARITY:

Age group in years	**Number of patients**	**Percentage**	**Parity**	**Number of patients**	**Percentage**
20-25	93	68.38	Nulliparous	81	59.55
26-30	25	18.38	1-2	41	30.14
31-35	12	8.82	3-4	10	7.35
36-40	6	4.41	>4	4	2.94

Table 2: MODES OF DELIVERY:

Modes	Number of cases	Percentage
Normal delivery	100	73.52
Caesarean section	32	23.52
Spontaneous abortion or S & E	04	2.94

Table 3: Fetal outcomes:

Outcome	**Number**	**Percentage**
Preterm delivery	25	18.38
Term delivery	111	81.62
Intruterine fetal death	2	1.4
Neonatal death	1	0.7
Baby weight ≥ 2.5kg	96	70.58
Baby weight 2- <2.5kg	32	23.52
Baby weight 1.5-<2kg	06	4.4
Baby weight <1.5kg	02	1.4

Table 4: APGAR SCORE:

Apgar score	**Number**	**Percentage**
≥7	110	82.08
3-6	19	14.28
<3	4	3.0
Need for SNCU/NICU admission	11	8.08

Table5: MATERNAL OUTCOMES

Complecations	Number	Percentage
Labour abnormalities (hypokinesia, hypotonia	17	12.5
Post partum haemorrhage	33	24.26
Postpartum thyroiditis	06	4.4
Postpartum depression	21	15.44

CONCLUSION

In pregnancy if these thyroid disorders are not detected or overlooked, because of the physiological changes during pregnancy, there may be adverse effects not only to the pregnancy but also to the perinatal outcome. Present study concludes that there is significantly high association between thyroid disorders and adverse perinatal outcome. In 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. If the condition is detected early, it is easy to treat, with very little detriment to the mother and the fetus. Hence, this condition needs early detection, prompt initiation of treatment, adequate follow-up and most importantly, sufficient education of the doctors and the patients

regarding these objectives, the importance of this condition and the ease and advantages of prompt management. Universal screening for thyroid function should be reccomended in all antenatal patients.

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