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Original Research Article

STUDY OF HYPOTHYROIDISM IN PREGNANCY AND IT'S FETOMATERNAL OUTCOME: A RETROSPECTIVE STUDY AT TERTIARY CARE HOSPITAL

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Abstract

Introduction: Thyroid dysfunction is the second most common endocrinological disorder during pregnancy, with hypothyroidism being more common than hyperthyroidism. The overall prevalence of subclinical hypothyroidism in general population has been reported to be 4% -8.5% while overt hypothyroidism is 0.2 – 0.3%. Hypothyroidism in antenatal women commonly caused by Hashimotos thyroiditis, iodine deficiency (most common), radioactive iodine therapy, or surgical thyroid removal, negatively impacts both mother and child.

Aims and Objectives: To evaluate the prevalence of hypothyroidism in pregnancy and to determine association of feto-maternal outcome with hypothyroidism.

Material and Method: After approval from IEC, this retrospective study was conducted on 500 pregnant women who visited the antenatal clinic and/or admitted in Department of obstetrics and Gynaecology, MGM Medical College & MTH Hospital indore. Women with singleton pregnancy irrespective of the period of gestation were enrolled after taking an informed written consent. Detailed history and fasting blood sample collection for measuring serum TSH level was done. Appropriate Statistical analysis was done.

Results: Out of 500 cases, 35 (7%) cases found to be hypothyroid. Among them, 7 (20%) had overt hypothyroidism and 28 (80%) demonstrated subclinical hypothyroidism. Subclinical hypothyroidism was more prevalent in 19-25yrs age group and overt hypothyroid in 35-43yrs age group. Most common complications were Pre-eclampsia [4(11.4%)] and IUGR [2(5.7%)].

Conclusion: Thyroid hormone is crucial for placental development in pregnancy, especially during the first twelve weeks. Early diagnosis and treatment of maternal hypothyroidism can reduce complications like abortion, pre-eclampsia, IUGR, placental abruption, oligohydramnios, and low birth weight. Inadequately treated hypothyroid women have a 3-fold higher risk of developing preeclampsia, abortion, or fetal growth restriction.

Keywords: hypothyroidism, pregnancy & fetomaternal.

Study Design: Observational Study.

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1. INTRODUCTION

Thyroid disorders constitute one of the most common endocrine disorders in pregnancy and thyroid physiology plays a major role in pregnancy alteration in thyroid functions occurs due to increased thyrotropic effect of human chorionic gonadotropin (HCG), increased thyroid hormone binding globulin (TBG) concentration, and increased iodine clearance in the kidneys [1]. Fetus depends on maternal thyroid hormone for organogenesis, general growth, and development of a central nervous system since fetus synthesizes thyroid hormone only by the end of the first trimester [2].

The prevalence of thyroid dysfunction is high in pregnant women, with subclinical dysfunction in 10% of pregnancies and overt in 2% - 3% of pregnancies [3]. Subclinical hypothyroidism occurs in 3% - 5% of pregnancies and overt hypothyroidism in 0.3% - 0.5%. TSH level of 2.5 mIU/L in the first trimester and TSH level of 0.2 - 3 mIU/L in the second trimester and free thyroxine (FT4) as 12 - 30 pmol/l has been accepted according to the guideline of the American thyroid association published in 2011 for an accurate diagnosis and management of thyroid disease in pregnancy[4].

Thyroid dysfunction in pregnancy is the commonest disorder encountered among the antenatal women. The most common causes of hypothyroism in anenatal women are Hashimotos thyroiditis, iodine deficiency, radioactive iodine therapy and surgical removal of thyroid. Screening for hypothyroidism is pertinent during pregnancy because of its proven influence on feto-maternal outcomes. In India, as per existing literature, the prevalence of overt and subclinical hypothyroidism in pregnancy is reported between 3 to 4.58% and 6.47–9%, respectively[5]. Complications of hypothyroidism in pregnancy

Fetal complications include spontaneous abortion, intrauterine growth restriction (IUGR), oligohydramnios, preterm delivery, fetal distress and low birth weight Maternal complications include pregnancy induced hypertension (preeclampsia, eclampsia),and placental abruption. Thus, thyroid disorders during pregnancy predispose to increased feto-maternal and neonatal morbidity and mortality[6]. This makes it imperative to identify women at risk by early screening and initiation of timely treatment. Starting thyroxine treatment in the 1st trimester (preferably prenatally) may decrease the incidence of complications.

AIM

1. To evaluate the effect of thyroid dysfunction in pregnancy and its consequent fetomaternal outcome.

OBJECTIVES

1. To determine the prevalence of hypothyroidism in pregnancy in a tertiary care facility
2. To observe the adverse effect of hypothyroidism in pregnancy and
3. To evaluate the obstetric and perinatal outcomes in such pregnancies which will give us an idea about the healthcare burden of thyroid disorders in pregnancy in India.

2. MATERIAL AND METHODS

This was a hospital based retrospective study conducted at Department of Obstetrics & Gynecology, MTH Hospital of MGM Medical College, Indore and 341 ANC patient admitted in our hospital with diagnosis of hypothyroidism were included for the study. Data was

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collected from the records of receiving room register (RR), labor room registers, operation room registers and medical record department (MRD). Duration of the study: January 2022 to December 2022

INCLUSION CRITERIA:
1. Known history of thyroid dysfunction.
2. Women who are taking medications for thyroid diseases.

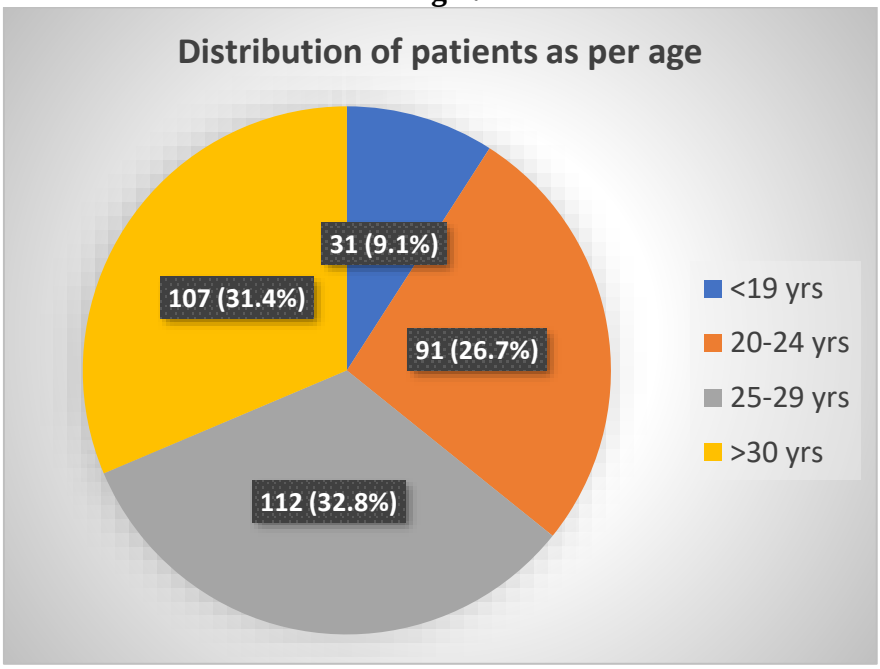
EXCLUSION CRITERIA:
1. Pregnant women with multiple pregnancies, gestational trophoblastic disease, bad obstetric history (BOH) with known cause, medical illness (DM, HTN), liver disorders, renal disorders, with previous thyroid surgery, on treatment for thyroid disorders,
2. Patients on drugs which affect the thyroid function like iodine, amiodarone, and
3. Patients not willing to participate were excluded from the study.

METHODOLOGY
Maternal outcome variables studied were mainly- pre-eclampsia, abruption placentae, preterm labour and delivery, abortions, PPH. Fetal outcome variables studied were- preterm birth, low birth weight (LBW), IUGR, IUFD, NICU admission and neonatal death.

3. RESULT

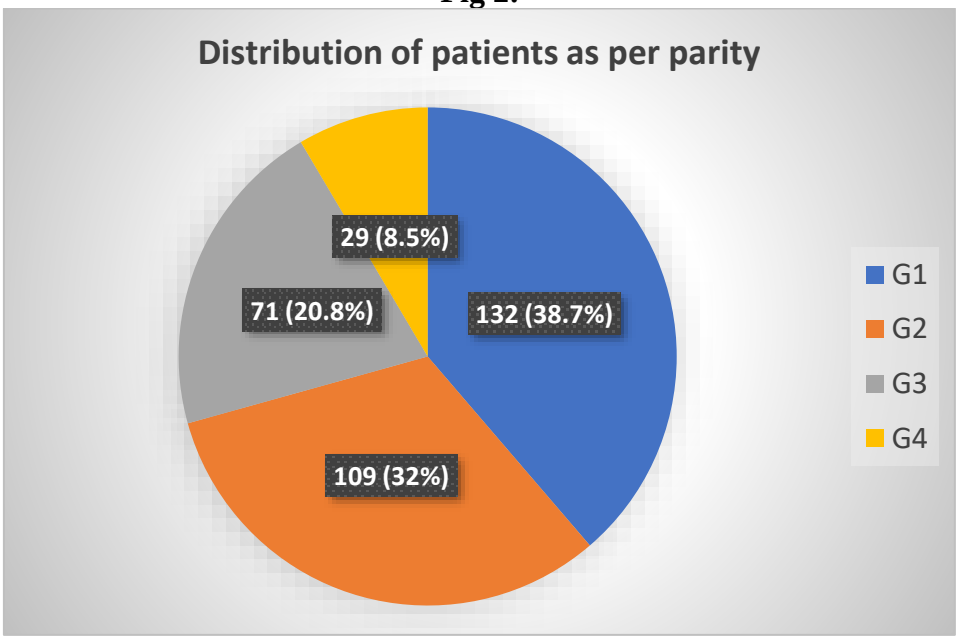
Out of 5683 patients admitted in Obstretics and gynecology department 341 patients with Hypothyroidism patients were taken for study. The prevalence of hypothyroidism was 6%.
Antenatal case with hypothyroidism, maximum number of cases of is of Age 25-29 is 112 (32.8%) followed by more than 30yrs is 107 (31.4%), 20-24yrs was 91 (26.7%) and least was of less than 19 yrs i.e. 31 (9.1%).

Fig 1:



ISSN: 0975-3583, 0976-2833 VOL15, ISSUE6, 2024

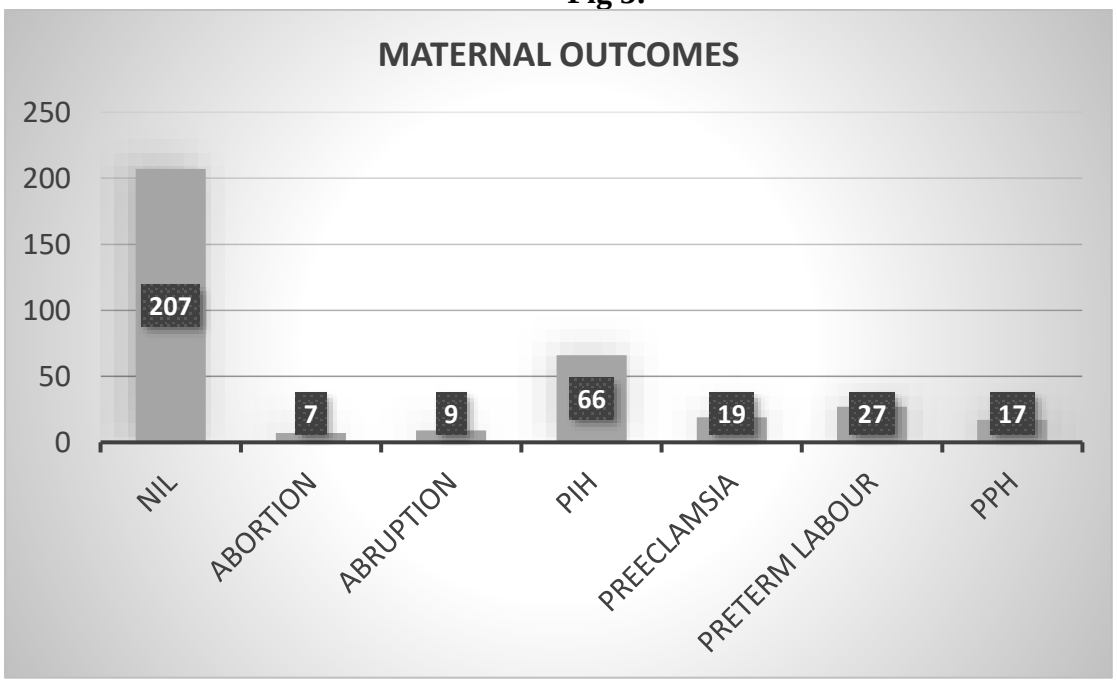
Fig 2:



Adverse maternal outcomes were observed in 134 patients (39.3%) and there were no complications in the rest 207 patients. The most common complications encountered were – abortion [7(5.22%)], PIH [66 (49.3%)], pre-eclampsia [19(14.2 %)], abruptio placentae [9(6.71%)], preterm labour [27(20.14%) and PPH [66(4.98%).

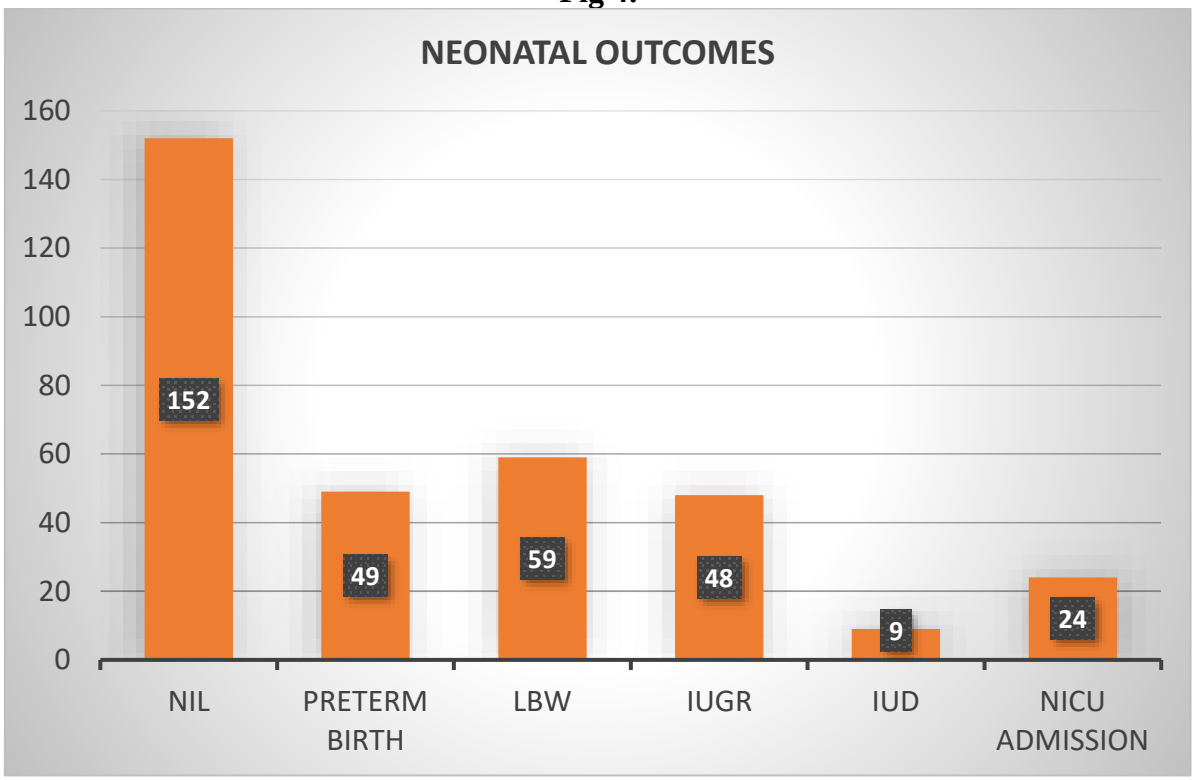
Among the **neonatal outcomes**, 152 (44.57%) had none and remaining 189(55.43%) had adverse fetal outcomes - preterm births [49(14.36%)], LBW [59(17.3%)], IUGR [48(14.07%)], NICU admission [24(7.03%)] and IUD [9(2.63%)]

Fig 3:



ISSN: 0975-3583, 0976-2833 VOL15, ISSUE6, 2024

Fig 4:



4. DISCUSSION

The prevalence of hypothyroidism was 6% in our study. Similar results were reported by Monika et al., Rajoriya M et al. and Gayathri et al. Contrasting results were reported by Dhanwal et al. (14.3%) and R. Kumar et al. (30.1%)[7].

The mean age of sub clinical hypothyroid population was 19-25 years and the mean age for overt hypothyroid was 35-43 years. Similar results were reported by Monika et al. & Ajmani et al.

In our study, among 341 hypothyroid women, maximum number of cases of is of Age 25-29 is 112 (32.8%) followed by more than 30yrs is 107 (31.4%), 20-24yrs was 91 (26.7%) and least was of less than 19 yrs i.e. 31 (9.1%) This shows increasing prevalence of hypothyroidism as maternal age advances. However, association with age was not statistically significant on chi-square test (p-value>0.05). This was similar as reported by R. Kumar et al., Monika et al. and Akhter et al[8].

In the present study, we observed many maternal complications in women with hypothyroidism that varied in severity and presentation, with PIH being the most common in hypothyroid women, followed by preterm labour and preclamsia. The results of the present study were comparable to other studies done by R.Kumar et al., Rajoriya M et al. , Sahu MT et al. Monika et al. and Mahadik k et al[9].

For Neonatal adverse effects, LBW was most common (17.3%) followed by preterm birth (14.36%)], IUGR [48(14.07%)], NICU admission [24(7.03%)] and IUD [9(2.63%)]

A study done by Rao et al. demonstrates that hypothyroidism has a statistically significant relationship with recurrent pregnancy loss in the first trimester and suggests that diagnosis of hypothyroidism could help couples with recurrent pregnancy loss to have a successful outcome in subsequent pregnancies[10].

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There are many limitations in our study, the greatest being the sample size of only 341 patients. Study on a much larger sample would enable us to understand the exact picture and magnitude of the problem[11]. Also, in our study, we did not screen the patients for TPO or thyroid antibodies, which would give a much clearer and better understanding of the same.

5. CONCLUSION

Thyroid hormone is crucial for placental development in pregnancy, especially during the first twelve weeks. Early diagnosis and treatment of maternal hypothyroidism can reduce complications like abortion, pre-eclampsia, IUGR, placental abruption, oligohydramnios, and low birth weight. Inadequately treated hypothyroid women have a 3-fold higher risk of developing preeclampsia, abortion, or fetal growth restriction.

6. REFERENCES

1. Monika, Khoiwal S, MouryaA, Sharma N, Jorwal A.Study of hypothyroidism in pregnancy and it's fetomaternal outcome: a prospective study at tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2022;11:3355-8
2. Sahu MT et al. Overt and Subclinical dysfunction, among indian pregnant women and its effect on maternal & fetal outcome. Archives of gynaecology and obstetrics. 2010; 281(2):215-220
3. Rajoriya M, Singh D. The analysis of pregnancy with hypothyroidism and fetomaternal outcome in M.G.M. medical college, Indore. International Journal of Clinical Obstetrics and Gynaecology 2020; 4(3): 88-90
4. R. Kumar et al. Prevalence of thyroid dysfunction in pregnancy and its association with feto-maternal outcomes: A prospective observational study from a tertiary care institute in Northern India. Clinical Epidemiology and Global Health 19 (2023) 101201
5. Dhanwal DK, Bajaj S, Rajput R, Subramaniam K, Chowdhury S, Bhandari R, et al. Prevalence of hypothyroidism in pregnancy: An epidemiological study from 11 cities in 9 states of India. Indian J Endocr Metab. 2016;20:387-90.
6. Gayathri R, Lavanya S, Raghavan K. Subclinical hypothyroidism and autoimmune thyroiditis in pregnancy - a study in South Indian subjects. J Assoc Phys India. 2009; 57(10):691–693.
7. Abadi KK, Jama AH, Legesse AY, Gebremichael AK. Prevalence of Hypothyroidism in Pregnancy and Its Associations with Adverse Pregnancy Outcomes Among Pregnant Women in A General Hospital: A Cross Sectional Study. Int J Womens Health. 2023;15:1481-1490. Published 2023 Oct 3. doi:10.2147/IJWH.S429611
8. Olmos RD, De Figueiredo RC, Aquino EM, Lotufo PA, Bensenor IM. Gender, race and socioeconomic influence on diagnosis and treatment of thyroid disorders in the Brazilian longitudinal study of adult health (ELSA-Brasil). Braz J Med Biol Res. 2015 Aug;48(8):751–758.
9. Sichieri R, Baima J, Marante T, De Vasconcellos MTL, Moura AS, Vaisman M. Low prevalence of hypothyroidism among black and Mulatto people in a populationbased study of Brazilian women. Clin Endocrinol. 2007 Jun;66(6):803–807.
10. Sreelatha S, Nadagoudar S, Devi LA. The study of maternal and fetal outcome in pregnant women with thyroid disorders. Int J Reprod Contracept Obstet Gynecol. 2017; 6(8):3507.
11. Mahadik K, Choudhary P, Roy PK. Study of thyroid function in pregnancy, its fetomaternal outcome; a prospective observational study. BMC Pregnancy Childbirth. 2020 Dec;20(1):769.