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Research Article

Effects of Hypothyroidism in Pregnancy and its Outcome

Pooja P[1], Lakshmi A[1], Prashanth FG[1], Raziya Begum[1] and Sreelatha S[2]*

[1]*Junior Resident, Department of OBG, ESIC MC and PGIMSR, Rajajinagar, Bangalore, India*

[2]*Professor, Department of OBG, ESIC MC and PGIMSR, Rajajinagar, Bangalore, India*

***Corresponding Author:** Sreelatha S, Professor, Department of OBG, ESIC MC and PGIMSR, Rajajinagar, Bangalore, India.

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Abstract

Background: Hypothyroidism is one of the most common endocrinopathy associated with pregnancy with prevalence of 3 - 5%. Studies suggest that not only overt hypothyroidism, but also subclinical hypothyroidism is associated with adverse maternal and fetal outcomes.

Aims: To Identify the comorbidities and maternal and fetal outcomes associated with hypothyroidism in pregnancy.

Methods: This is an observational study conducted on 100 pregnant women attending antenatal clinic in ESIC medical college and PGIMSR during the study period of 1 year from January 2020 to December 2020. The patients who were diagnosed to be hypothyroidism based on their TSH levels were included in the study and were followed up. Demographic profile, Maternal and Fetal outcomes were recorded.

Results And Discussions: Among 100 hypothyroid women, 100 were diagnosed to be hypothyroid, median age was 28 years, Gestational Diabetes (20%), Gestational hypertension (22%), Preterm Delivery (24%), IUGR (21%), Premature rupture of membranes (20%), Intrauterine death (3%), Abruption (2%), Postpartum hemorrhage (7%) were seen.

Conclusion: Hypothyroidism is one of the significant risk factor contributing for increased maternal and neonatal mortality and hence close monitoring of thyroid function and adjustment of thyroxine dose is necessary throughout the pregnancy to avoid its adverse effect.

Keywords: *Pregnancy; Hypothyroidism; Preterm; Post Partum Hemorrhage; Gestational Diabetes*

Introduction

Hypothyroidism is the second most common endocrinopathy during pregnancy and maternal hypothyroidism is associated with adverse maternal and fetal outcomes like abortions, gestational hypertension, pre eclampsia, abruption, low birth weight, premature delivery, abruption.

In first trimester, Human chorionic gonadotrophin (hCG) stimulates elevation of free thyroxine (fT4) in maternal serum which cause decrease in level of thyroid stimulating hormone (TSH) compared to pre conception level. Eventually the serum levels of fT4 reduces by 10% and maternal level of TSH gradually increases to normal levels.

During second and third trimester due to increase in serum concentration of thyroxine binding globulin (TBG) leads to increase in both T3 and T4 levels associated with increased daily iodide consumption and decreased TSH levels and elevated urinary Iodine excretion.

The prevalence of subclinical hypothyroidism is 2 - 5% and overt hypothyroidism is 0.3 - 3% in western world. However, in some studies conducted in Asian subcontinent the prevalence ranges from 4.8% to 13.13%.

Purpose of the Study

The purpose of this study is to evaluate the maternal and fetal outcomes in pregnant women with hypothyroidism.

Aims and Objectives

- To determine the co morbidities associated with maternal hypothyroidism.
- To assess the maternal and fetal outcomes.

Materials and Methods

A descriptive study in Department of Obstetrics and gynaecology at ESIC-PGIMSR, Rajajinagar, Bengaluru from January 2020 to December 2020. In all patients who attended antenatal OPD, a detailed history was obtained regarding age, gestational age and their other complaints. A detailed examination was done including general physical and antenatal examination. All routine investigations like blood grouping Rh typing, serology, OGTT, thyroid function test were sent. Patients who were diagnosed as hypothyroidism were followed up till delivery and their maternal and fetal outcome was noted.

Maternal outcomes- spontaneous abortion, pre eclampsia, gestational hypertension, gestational diabetes mellitus, preterm labor, mode of delivery, placental abruption.

Fetal outcomes- intra uterine fetal demise, IUGR, prematurity, low birth weight, need for NICU.

Inclusion criteria

All women attending antenatal clinic who were diagnosed with Hypothyroidism.

Exclusion criteria

- Multiple gestation.
- Chronic hypertension.
- Overt diabetes.

Sample size

An estimated 3000 pregnant women were screened in a year at ESIC hospital Department of OBG, of which 200 cases were diagnosed to have hypothyroidism.

Data analysis

Data were entered in Microsoft Excel and statistical analysis were carried out in SPSS software version 24.0. Qualitative variables were presented as frequency and percentages. Quantitative variables were presented as mean or median depending upon the distribution of data. Bar diagram and Pie charts were used for graphical representation of data.

Results

Sub clinical hypothyroidism is defined as a presence of elevated serum TSH with normal fT4 or TT4 values.

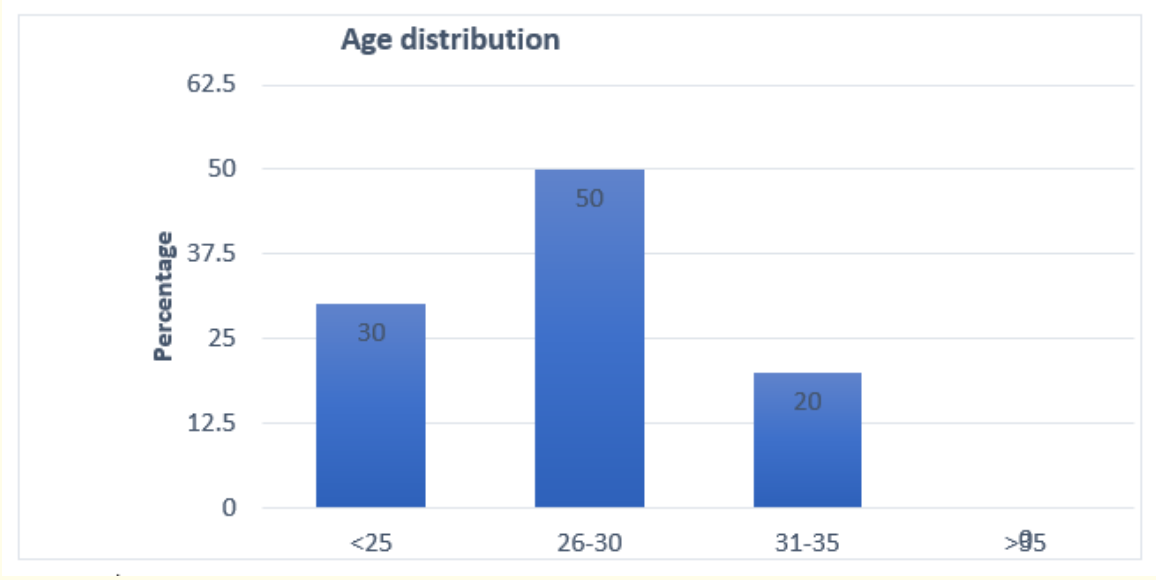

Figure 1: *Age distribution.*

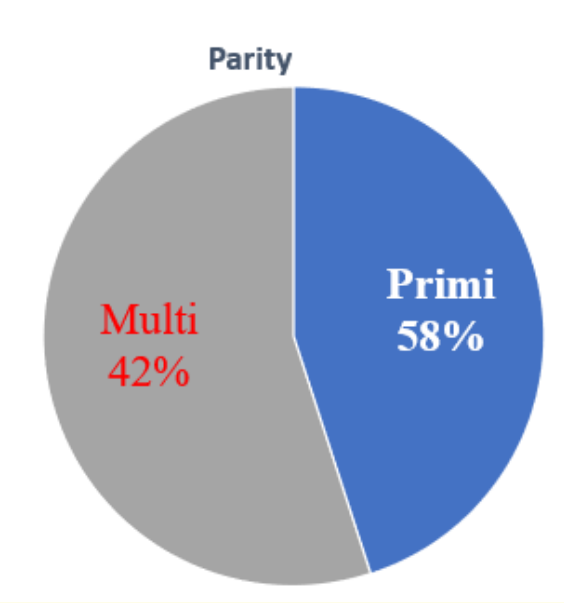

Figure 2: *Parity.*

Study variables		Modalities			
	Yes		No		
Socio-demographic profile of parturients	Age < 25 years	54	(35.76%)	97	(64.24%)
	Senegalese nationality	138	(91.39%)	13	(8.61%)
	Urban residence	143	(94.70%)	8	(5.30%)
	Islam	149	(98.68%)	2	(1.32%)
	Wolof ethnicity	46	(30.46%)	105	(69.54%)
	Instruction	125	(82.78%)	26	(17.22%)
	Marital status = Married	140	(92.72%)	11	(7.28%)
	Matrimonial regime = Monogamous	112	(80.00%)	28	(20.00%)
Reproductive health and family planning assessment	Number of pregnancies < 2	67	(44.37%)	84	(55.63%)
	Number of children alive < 2	75	(49.67%)	76	(50.33%)
	Inter-reproductive space <2 years	20	(25.32%)	59	(74.68%)
	Sensitized on contraception	139	(92.05%)	12	(7.95%)
	History of contraceptive use	38	(25.17%)	113	(74.83%)
Service IPPFP	Proposal for a IPPFP method	68	(45.03%)	83	(54.97%)
	Wish to use a method	79	(52.32%)	72	(47.68%)
	Meeting needs	17	(21.52%)	62	(78.48%)

***Table 1**: Characteristics of parturients.*

Dietary iodine is another factor for thyroid hormone synthesis. Iodine requirement in pregnancy increases by 50% in concurrence with 50% increase in thyroid hormone synthesis. The requirement increases from 150µg in non pregnant women to 250 µg daily during pregnancy. According to 2011 ATA, 2012 Endocrine Society (ES), and 2014 European Thyroid Association (ETA) the upper normal limit for TSH is quite similar: 2.5 mU/l for the first trimester, 3.0 mU/l for the second and 3.0 - 3.5 mU/l for the third trimester.

Discussion

The prevalence of hypothyroidism in our study is 6.6% which is in comparable to the study conducted by Nambiar V., *et al* [1].

The mean age of the hypothyroid pregnancy was found to be 25 - 30yrs which is similar to the study done by Zareen K., *et al.* [2] as illustrated in figure 1.

In our study, 58% were primigravida and 42% were multigravida as illustrated in figure 2.

Thyroid hormones have significant effects on cardiovascular physiology and blood pressure regulation, hence there is association with hypothyroidism and Preeclampsia. In our study 11% had preeclampsia which was comparable to the study conducted by Zareen K., *et al* [2].

Maternal thyroid hormones have significant role in early placentation and trophoblastic invasion [3]. Inadequate trophoblastic cell invasion cause abnormal placentation, which is a risk factor for preterm delivery, IUGR, placental abruption and Intrauterine death [2]. In our study preterm (24,12%), IUGR (3,10.5%), Abruption (2,1%), Intrauterine death (3,1.5%). Which is comparable to studies conducted by Braian M., *et al.* [4], Fahimeh., *et al.* [5], Zareen K [2], Kim YM., *et al* [6].

Postpartum haemorrhage was found in 3.5% in our study, but it was found to be most frequent maternal complication in study conducted by Zareen K., *et al.*

Hypothyroidism appeared to negatively affect the glucose homeostasis by inducing insulin resistance and hence have increased risk of gestational diabetes. GDM was found in 10% in our study which was comparable to study conducted by Zareen K et al and Gong., *et al* [5].

In our study 55% of them delivered by cesarean section, which was comparable to the study done by Zareen K., *et al* [2].

Conclusion

Hypothyroidism is associated with increased adverse maternal and fetal outcomes especially Preeclampsia, Preterm birth, Low birth weight, Increased rates of caesarean section.

This emphasizes the importance of screening of all pregnant women for hypothyroidism and its adequate treatment.

Bibliography

1. Nambiar V., *et al*. "Prevalence and impact of thyroid disorders on maternal outcome in Asian Indian pregnant women". *Journal of Thyroid Research* (2011): 42.

2. Zareen K., *et al*. "Maternal characteristics and outcomes affected by hypothyroidism during pregnancy". *BMC Pregnancy and Childbirth* 476 (2019): 1-12.

3. Klein RZ., *et al*. "Prevalence of thyroid deficiency in pregnant women 35.1 (1991): 41-46.

4. CM Brian., *et al*. "Subclinical hypothyroidism and Pregnancy Outcomes 105.2 (2005): 239-245.

5. RT Fahimeh., *et al*. "Hypothyroidism in pregnancy". *The Annals of Thyroid* 3 (2018): 22.

6. Kim YM., *et al*. "Failure of physiologic transformation of the spiral arteries in patients with preterm labour and intact membranes". *American Journal of Obstetrics and Gynecology* 189.4 (2003): 1063.

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