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Assessment of thyroid status during pregnancy with perinatal outcome.

Dr Malavalli Kempasiddaiah Girija[1] Dr Sumedha Swamy[2]
[1]*Associate Professor, Department of Obstetrics and Gynaecology, Bharatha Ratna Dr B.R. Ambedkar Medical College&Hospital,Bengaluru, Karnataka, India.*
[2] *Junior Resident, Department of Obstetrics and Gynaecology, Bharatha Ratna Dr B.R. Ambedkar Medical College &Hospital,Bengaluru, Karnataka, India.*

Abstract:
Objectives*: To assess and compare the maternal and fetal outcome of Euthyroid, Hypothyroid and Hyperthyroid women during 1st trimester of pregnancy.* ***Methods****:It is a prospective cross sectional study Conducted on 1200 pregnant women who were enrolled between January 2011 to December 2012.***Result****: Out of 1200 pregnant women were studied between 5-13 weeks of gestation of which 50(4.16%) were diagnosed to be hypothyroid, were treated with Thyroxine and 1150(95.83%) were euthyroid. and all the women were followed upto delivery .***Conclusion****:The above study concludes that the frequency of hypothyroidism during pregnancy is 4.16%..*
Keywords*: Abortion, Hypothyroidism, Perinatal, Pregnancy, Thyroid gland,*

I. Introduction

Thyroid dysfunction is the commonest endocrine disorder in modern medicine affecting fourty two million people in India[1]and constitutes one of the most common endoxine disorders during pregnancy after Diabetes mellitus. Thomas Wharton in1656 gave "THYROID GLAND"its modern name means Oblong shield.[2] Thyrocrine is one such hormone secreted by this gland. This hormone has great impact on the reproductive function of women and on the development of the child. This gland plays an important role in cellular oxidation and neurophysiologic development.[3]During pregnancy, maternal thyroid function is important for mother and child[4],especially in 1st trimester, when the fetus is dependent on mother for development.[5]Fetus needs thyroxine for brain development, growth and lung maturation.[6]If material levels of thyroxine are not well maintained during pregnancy, then foetus is also at risk.[7]This demands early serum thyroid stimulating hormone(Sr TSH) screening and more frequent Monitoring of thyroxine levels during pregnancy.

II. Methods

This was a prospective cross sectionaly study done in Department of Obstetrics & Gynaecology, Bharatha Ratna Dr. B.R. Ambedkar Medical College& Hospital, from January2011 to December2012. Total of 1200 pregnant women who attended the out patient department (OPD) during first trimester were included in the study. Pregnant women with Medical disorder were excluded from the study. Other condition like Twin pregnancies and those who were diagnosed eariler with thyroid disorders are also excluded.

III. Result

Out of 1200 pregnant women, 50 women were Hypothyroid(4.16%) and 1150 were euthyroid(95.83%).Table 1 shows the frequency of hypothyroidism during pregnancy in the present study was 4.16%(50/1200). Table 2 shows the age of women included in the study were in the range of 16-40 years. The maximum number of women belonged to the age group of 26-30 years. Mean age of women in Euthyroid group was 27.17+-4.16, while in hypothyroidism it was 26.1+-5.56. Distribution of women according to gravid, which shows primigravidae were 581(50.52%) in eurhyroid and 29(58%) in hypothyroid group. Table3 shows the frequency of hypothyroidism was 50(4.16%). During the study period, there was no case of hyperthyroidism during pregnancy. Table4 shows Abortion 5(43.47%) and Preterm 15(1.30%) in euthyroid group. Table5 shows neonatal death 3 and intra uterine death 1 in hypothyroid group. Table 6 shows caesarean section 10(23.25%) and Instrumental deliveries is 4(9.30%) in hypothyroid group.

IV. Discussion

Thyroid disorders is observed 4 to 5 fold more frequently in women when compared with men, more so during child bearing period. Hormonal changes and metabolic demands during pregnancy result in profound alterations in biochemical parameters of thyroid function. Thus management of thyroid diseases during

pregnancy requires a special consideration because pregnancy induces major changes in thyroid function and maternal thyroid disorder can have adverse effects on pregnancy[8]

In this study,1200 antenatal women were enrolled, after taking detailed history and clinical examintation and basic investigation, serum TSH was done in all women (0.45-4.45mIU/ml) Women with raised TSH were started on thyroxine and the dose was adjustment accordingly depending on the TSH levels
In this study, the incidence of Primi gravidae is 29(58%).in hypothyroid group. Other studies like Sharma P et al, Aziz Nuzhat et al and Sejakan P et al were reported 44.66%, 34.1% and 75.6%

In this study, the gestational age of booking of all the antenatal women was between 5-13 weeks. Other studies like Allan WC shows that booking done at 15-18weeks and Sahu MT et al booked at 2nd trimester.
In this study, the Frequency of hypothyroidism is 4.16%, were as others like Allan WC, Casey et al, and Sharma P showed 2.2%, 2.3% and 1.15% respectively. But one study by Sejakan P et al showed 62.19% which was very high as compared to all the other studies.

In this study, the maternal complications Abortion 14% and Preterm 11% in hypothyroid group , were as other studies Sharma P et all showed 4.87% in Abortion and Preterm about 19.51%. In one more study by Stagnaro et al showed 17% in Abortion and Preterm had 3 fold increase.

In this study, the Caesarean section rate is 23.25% in hypothyroid as compared to Sharma P et al 61.54%. And finally the Perinatal Mortality in this study showed Intrauterine death(IUD) is 2.32% and Neonatal death(NND) was 6.97% as compared to others like Allan WC et al had 11.9% IUD and 3.1% NND, Sharma P et al has 5.12% IUD and 2.70% NND, and Aziz Nuzhat et al had 3.1% IUD and 2.48%NND.

V. Conclusions

Inspite of diagnosis of hypothyroidism in first trimester and adequate treatment their was significant increase in maternal and perinatal complications. Early diagnosis in first trimester can prevent the fetal brain damage and neurointellecutual development of the fetus. In Indian scenario, universal screening for thyroid disorder is essential as there is significant increase of thyroid dysfunction in iodine deficient areas.

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Table No.1 Distribution of women according to Serum TSH levels

Sl No	Thyroid Status	Number(n=1200)	Percentage
1	Euthyroid	1150	95.83%
2	Hypothyroid	50	4.16%
3	Hyperthyroid	Nil	0%

Table No.2 Distribution of women according to Age &Gravidity

Sl No	Description	In years/	Euthyroid (n=1150)	Hypothyroid (n=50)
1	Age	16-20	30(2.60%)	10(20%)
		21-25	400(34.78%)	12(24%)
		26-30	465(40.43%)	17(34%)
		31-35	240(20.86%)	09(18%)
		36-40	15(1.30%)	02(4%)
		Mean+/-SD	27.17+/-4.16	26.1+/-5.56
2	Gravidity	PRIMI	581(50.52%)	29(58%)
		Multi	569(49.47%)	21(42%)

Table No.3: Distribution of hypothyroidism with Serum TSH levels &Serum TSH values in all women:

Sl No	Description	(mIU/ml)	Number(n=1200)	Number(n=50)
1	Serum TSH values	Less than 0.45	Nil(0%)	-
		0.45-4.45	1150(95.83%)	-
		More than 4.45	50(4.16%)	-
2	Hypothyroidism with Serum TSH levels	4.45-7.9	-	31(62%)
		>8	-	19(38%)

Table No4:Pregnancy out come in Euthyroid and Hypothyroid group

Sl No	Pregnancy out come	Euthyroid (n=1150)	Hypothyroid (n=50)
1	Abortion	5(43.47%)	7(14%)
2	Preterm	15(1.30%)	11(22%)
3	Term	1130(98.26%)	32(64%)

Table No5:Perinatal Mortality in Euthyroid and Hypothyroid group

Sl No	Perinatal Mortality	Euthyroid (n=1145)*	Hypothyroid (n=43)*
1	Fresh Stillbirth	1(0.08%)	Nil
2	Intrauterine deaths	4(0.34%)	1(2.32%)
3	Neonatal Deaths	7(0.61%)	3(6.97%)
*In Euthyroid there were 5 abortion so total is 1145,in hypothyroid there were 7 abortion so total is 43			

Table 6.Mode of deliveries in Euthyroid and Hypothyroid group.

Sl No	Mode of Deliveries	Euthyroid (n=1145)	Hypothyroid (n=43)
1	Normal vaginal	840(73.36%)	29(67.44%)
2	Instrumental	29(2.5%)	1(2.3%)
(i)	Vacuum		
(ii)	Outlet Forceps	11(0.96%)	3(6.9%)
3	Caesarean Section	265(23.14%)	10(23.25%)