International Journal of Basic and Applied Medical Sciences ISSN: 2277-2103 (Online)
An Open Access, Online International Journal Available at http://www.cibtech.org/jms.htm
2014 Vol. 4 (3) September-December, pp. 130-134/Sapana and Chaitanya
Research Article

PREVALENCE OF HYPOTHYROIDISM DURING PREGNANCY

***Sapana C. Shah[1] and Chaitanya R. Shah[2]**
[1]*Department of Obstetrics and Gynaecology, Khaja BandaNawaj Institute of Medical Sciences, Gulbarga, Karnataka, India*
[2]*Department of Orthopaedic Surgery, Gulbarga Institute of Medical Sciences, Gulbarga, Karnataka, India*
**Author for Correspondence*

ABSTRACT
Hypothyroidism is a common disorder in women in their reproductive age. The present study shows that the prevalence of hypothyroidism is 9% in pregnant women. The study also reveals that of hypothyroidism are adequately treated and monitored good maternal and fetal outcome results. Evidence from the present study supports the need for screening of hypothyroidism in pregnancy.

Keywords: *Hypothyroidism, Pregnancy*

INTRODUCTION
Thyroid gland is an important endocrinal gland in the human body. It is the most studied endocrinal system in the human body. It functions to maintain homeostasis & basic metabolic rate.
The prevalence of clinical and subclinical hypothyroidism during pregnancy is estimated to be 1% and 6%[3] respectively. Chronic autoimmune thyroiditis & iodine deficiency are the main causes of hypothyroidism.
Fisher *et al.,* (1979) proposed screening program for the early diagnosis and treatment of sporadic congenital hypothyroidism. This screening program was advised to detect cases of cretinism.
Montoro *et al.,* (1981) suggested that adequate treatment with thyroxine greatly decreased the frequency of obstetric complication in hypothyroid pregnant women. So he emphasized on maintaining free T4 level in normal range to prevent hypothyroid associated complication.
Davis *et al.,* (1989) in their observational study `thyrotoxicosis in pregnancy,' showed that there is higher incidence of preterm labour in the hyperthyroid women compared with control. There was worsening of disease, development of congestive cardiac failure and increased fetal demise in hyperthyroid women. So conclusion was that hyperthyroidism in pregnancy was associated with adverse maternal and fetal outcome. Stagnaro-Green *et al.,* (1990) screened 552 women in the 1st trimester of pregnancy and showed that women who were antibody positive miscarried at a rate of 17% compared with 8.4% for antibody negative women. This was the first study to show such relationship.
Vermiglio *et al.,* (1990) from Sicily, mentioned that attention deficit and hyperactivity disorder (ADHD) were more common in the children born to mothers with early gestational hypothyroxinemia.
Glinoer *et al.,* (1991) screened 120 women for thyroid disorders in pregnancy and its relation with abortion. Women with some form thyroid abnormality and auto-thyroid antibody positive were at increased risk for spontaneous abortion (13% versus 3%).

MATERIALS AND METHODS
Patients are decided to be screened by serum ultra TSH during their first antenatal visit. The test was explained and counseling done. The reference range taken for serum ultra TSH was 0.49mu/l to 4.67mu/l. The reference range taken for serum free T_4 was 0.7 to 1.8 ng/dl.
If after initial screening serum ultra TSH value was found to abnormal (<0.49mu/l, >4.67mu/l), patient was counseled regarding further investigation and management. In this regard consultation with endocrinologist was sought whenever necessary. In women with an abnormal serum ultra TSH, serum free T_4 was requested and determined. When both values found to be abnormal then patient was labeled as hypothyroid or hyperthyroid.

Hypothyroidism was diagnosed when serum ultra TSH value was >4.67mu/l and free T_4 value <0.7ng/dl. Total 27 pregnant women are screened in this study. Some of the women in this study were diagnosed as having hypothyroidism before pregnancy; they were screened during pregnancy for abnormal TSH rise. In newly diagnosed hypothyroid women thyroxine was started according to serum ultra TSH level and body weight. In known hypothyroid women the dose of thyroxine was incremented to maintain ultra TSH within range. Initially these patients are monitored 4 weekly till the TSH stabilized. Then they were monitored with serum ultra TSH every 8 weeks till delivery.

RESULTS AND DISCUSSION

Table 1: Distribution of age among women in this study related to Hypohyroid status

Age (Years)	Hypothyroid	
	No. of cases	Percentage
20 - 24yrs	2	7.4
25 - 29yrs	15	55.6
30 - 34yrs	10	37.0
>34yrs	0	0
TOTAL	**27**	**100.0**

55.6% of the hypothyroid women aged 25 -29yrs. 7.4% of hypothyroid women aged between 20 -24yrs. 37% of the hypothyroid women were between 30 -34 yrs as shown in Table 1.

Table 2: Distribution of parity among women in this study related to Hypothyroid status

Parity	Hypothyroid	
	No. of cases	Percentage
Primi	11	40.7
Gravida 2 – 4	16	59.3
>4 Gravida	0	0
Total	**27**	**100.0**

Table 2 reveals that majority of the hypothyroid women are multigravida (2-4) 59.3%. 40.7% of the hypothyroid women were Primigravida. Statistically distribution of parity among women in this study related to Thyroid status was insignificant.

Table 3: The distribution of mode of delivery in these women with hypothyroid Status (Abortion cases excluded)

Mode of Delivery	Hypothyroid	
	No. of cases	Percentage
Vaginal	11	45.8
Caesarean Section	13	54.2
Forceps	0	0
Total	**24**	**100**

Percentage was calculated out of the delivered cases only.

45.8% of women with hypothyroidism, delivered vaginally. 54.2% of women with hypothyroidism underwent caesarean section as shown in Table 3.

Table 4: Distribution of indications for caesarean section in hypothyroid women

Indication for CS	**Hypothyroid**	
	No. of cases	**Percentage**
Repeat CS	4	30.8
Fetal distress	5	38.5
CPD	1	7.7
Severe preeclampsia	0	0
Non-Progress of labor	0	0
Breech	3	23
Other (Twins / Chronic HT)	0	0
Total	**13**	**100.0**

CS- Caesarean Section, CPD – Cephalopelvic disproportion, HT –Hypertention

Number of caesarean section performed in hypothyroid are 13. Commonest indication seen for caesarean section in hypothyroid women was fetal distress (38.5%) which is shown in Table -4.

Table 5: Fetal outcome in these women

Fetal outcome	**Hypothyroid**	
	No. of cases	**Percentage**
Intrauterine death	2	7.4
Perinatal mortality	0	0
Normal	22	81.5
Aborted	3	11.1
Total	**27**	**100.0**

Table 5 reveals that Intrauterine death in case of hypothyroid women is (7.4%). Fetal outcome in these women was statistically insignificant.
(Fetuses >24 weeks gestation or > 500gms were included).

Table 6: Distribution of cases according to fetal weight in hypothyroid Women (Abortion cases excluded)

Fetal weight(gms)	**Hypothyroid**	
Birthweight (gms)	**No. of cases**	**Percentage**
<1500	1	4.2
1500—2000	1	4.2
2000—2500	0	0
2500—3000	16	66.6
3000—3500	6	25.0
>3500	0	0
Total	**24**	**100.0**

a- Twin pregnancy (1)

It can be noticed from Table 6 that 8.4% of babies in Hypothyroid group are <2500gms whereas 66.6% of babies in hypothyroid are between 2500 -3000gms and 25% of babies in hypothyroid group are between 3000 -3500gms.
Distribution of cases according to fetal weight in hypothyroid was statistically insignificant.
Thyroid dysfunction in pregnant women can influence the outcome for mother and fetus at all stages of pregnancy as well as interfare with ovulation and fertility. Maternal hypothyroidism during early pregnancy is associated with impaired neuropsychological development of children and other adverse outcomes, including premature birth, preeclampsia, breech delivery, and increased fetal mortality. These complications are seen in overt hypothyroidism, as well as in subclinical hypothyroidism.

Table 7: A comparative study of prevalence of hypothyroidism

Study	Prevalence of hypothyroidism
Sahu *et al., (2010)*	6.5%
Vargov *et al., (2009)*	5.9%
Fetki *et al., (2008)*	3.2%
Aziz *et al., (2006)*	2.5%
Casey *et al., (2006)*	2.3%
Gay *et al., (2000)*	9.5%
Allan *et al., (2000)*	2.2%
Present Study	9.0%

Allan *et al.,* (2000) found that women with raised TSH measurement are on an average 2.8 years older than women whose TSH was not raised.
Increasing age is a risk factor for development of hypothyroidism. But there is no consensus on maternal age above which there is increased risk for development of thyroid disorders (Table 7).
In this study majority of women are primigravida (54.7%) compared to gravida 2-4 (44.3%). Among the hypothyroid women majority are multigravida (2-4).
Aziz *et al.,* (2006) found majority of hypothyroid women (57.8%) are gravida 2-4 compared to primigravida (34.1%) & gravida >4 (8.07%).
In this study the prevalence of hypothyroidism was 9% and the prevalence of hyperthyroidism was 2%. 0ut of the 27 hypothyroid cases, 59.3% of the cases had subclinical hypothyroidism and 40.7% had overt hypothyroidism (Table 7).
Sahu *et al.,* (2010) in their study showed high prevalence of thyroid dysfunction. The prevalence of subclinical hypothyroidism was 6.5% and for overt hypothyroidism it was 4.5% (Table 7).
Fetki *et al.,* (2008) in their study conducted in Tunisian pregnant women showed prevalence of hypothyroidism was 3.2% (Table 7).
In a study by Aziz *et al.,* (2006) the prevalence of hypothyroidism was 2.5%. And study by Vargov *et al.,* showed prevalence of subclinical hypothyroidism 5.9% (Table 7).
Gay *et al.,* (2000) conducted prevalence study in the United States. In his study he showed that the prevalence of elevated TSH was 9.5% (Table 7).
Casey *et al.,* (2006) in their study showed overall prevalence of subclinical hypothyroidism was 2.3% (Table 7). The above variations in the prevalence could be because of different iodide status in the population. The high prevalence of hypothyroidism in this study could be because ours is tertiary referral centre. The prevalence of goiter is 12% in general population and also the iodine deficiency disorders are more common in the population. The incidences of maternal complications were high in hypothyroid women compared to euthyroid women (48% versus 16%) excluding abortions. The incidence of complications as preeclampsia (22.2% versus 5.6%), abruption (11.1% versus 1.1%), preterm delivery (7.4% versus 6.7%) and postpartum hemorrhage (7.4% versus 2.6%) were high in hypothyroid women compared to euthyroid women. The incidence of abortion was more in hypothyroid women than euthyroid women (11.1% versus 7.5%) which was statistically significant. In the present study all

hypothyroid women are adequately treated and monitored. In none of the hypothyroid women serum ultra TSH level was raised. Evidence from the present study supports the need for screening of hypothyroidism in pregnancy. Many studies on delayed neurological development in babies born to hypothyroid women have been published in recent years, and have advocated routine, prepregnancy and early pregnancy screening.

In the present study the prevalence of hypothyroidism is found to be 9%. Out of the 27 hypothyroid cases, 59.3% of the cases had subclinical hypothyroidism and 40.7% had overt hypothyroidism.

Hypothyroidism is a common disorder in women in their reproductive age. The present study shows the prevalence of hypothyroidism is 9% in pregnant women. As per the present study, 1 out of every 10 mothers attending the antenatal clinic suffered from a thyroid disorder.

Untreated hypothyroidism can affect the pregnancy and the neonate in an adverse fashion; though hypothyroidism when adequately treated and monitored had good maternal and fetal outcome.

REFERENCES

Allan WC, Haddow JE, Palomaki GE, Williams JR, Mitchell ML, Hermos RJ, Faix JD and Klein RZ (2000). Maternal thyroid deficiency and pregnancy complications: implications for population screening. *Journal of Medical Screening* **7**(3) 127-130.

Aziz Nuzhat, Reddy Pranathi, Fernandez Evita (2006). Hypothyroidism in pregnancy: Is universal screening needed? *Journal of Obstetrics and Gynecology of India* **56**(6).

Casey MD and Brain M (2006). Thyroid disease in pregnancy. *Obstetrics & Gynecology* **108**(5) 1283-1292.

Davis LE, Lucas MJ, Hankins GDV, Roark ML and Cunningham FG (1989). Thyrotoxicosis complicating pregnancy. *American Journal of Obstetrics & Gynecology* **160** 63-70.

Feki M, Omar S, Menif O, Tanfous NB, Slimane H, Zouari F, Rezigua H and Chelly H Kaabachi (2008). Thyroid disorders in pregnancy: frequency and association with selected diseases and obstetrical complications in Tunisian women. *Clinical Biochemistry* **41**(12) 927-31.

Fisher DA, Dussault JH, Foley TP, Klein AH, LaFranchi S, Larsen PR, Mitchell ML, Murphey WH and Walfish PG (1979). Screening for congenital hypothyroidism: results of screening one million North American infants. *Journal of Pediatrics* **94** 700-705.

***Gay* J Canaris, Manowitz NR, Mayor G and Ridgway EC (2000).** The Colorado Thyroid Disease Prevalence Study. *Archives of Internal Medicine* **160** 526-534.

Glinoer D, Fernandez SM, Bourdoux P, Lejeune B, Delange F, Lemone M, Kinthaert J, Robijn C, Grun JP and de Nayer P (1991). Pregnancy in patients with mild thyroid abnormalities: maternal and neonatal repercussions. *Journal of Clinical Endocrinology and Metabolism* **73** 421-427.

Montoro MM, Collea JV, Frasier SD and Mestman JH (1981). Successful outcome of pregnancy in women with hypothyroidism. *Annals of Internal Medicine* **94** 31-34.

Sahu MT, Das V, Mittal S, Agarwal A and Sahu M (2020). Overt and subclinical thyroid dysfunction among Indian pregnant women and its effect on maternal and fetal outcome. *Archives of Gynecology and Obstetrics* **281**(2) 215-20.

Stagnaro-Green A, Roman SH, Cobin RH, el-Harazy E, Alvarez-Marfany M and Davies TF (1990). Detection of at risk pregnancy using highly sensitive assays for thyroid autoantibodies. *JAMA* **264** 1422-1425

Vargová V, Mechírová V and Pytliak M (2009). Thyroid gland in the gravidity. *Ceská Gynekologie* **74**(1) 12-7.

Vermiglio F, Sidoti M, Finocchiaro MD, Battiato S, LoPresti VP, Benvenga S and Trimarchi F (1990). Defective neuromotor and cognitive ability in iodine-deficient school children of an endemic goiter region in Sicily. *Journal of Clinical Endocrinology and Metabolism* **70** 379-384.