

A Study on Sub Clinical Hypothyroidism in Pregnancy

Sree Gowri¹, Rathlawath Swapna¹

¹Assistant Professor, Department of Obstetrics & Gynaecology, RVM Medical College, Siddipat, Telangana.

Abstract

Background: Subclinical hypothyroidism and hypothyroidism are common endocrinological disorder which affects mothers during pregnancy. It effects foetus also. Thyroid hormone screening especially TSH (Thyroid stimulating hormone) and FT4 is important before pregnancy as thyroid hormone levels have important role for neurophysiological development of baby. **Subjects and Methods:** We have conducted this study on 435 antenatal women with 34-38 weeks of gestation. Detailed history was taken and clinical examination was done. Blood samples were sent to serum TSH and FT4 measurement. Subclinical hypothyroidism was noted in 18 mothers and they were compared with 55 euthyroid pregnant women. Mothers were followed up till discharge from hospital new born weight, abgarscore and serum TSH after 48 hours of birth to 7 days was measured. Aim of the study: To study the prevalence and complications of subclinical hypothyroidism in pregnant women and new born. **Results:** In our study the prevalence of subclinical hypothyroidism was 4.15% complication of subclinical hypothyroidism were pre-eclampsia 13.25%, and abruptio placenta 6.48%; foetus complications in subclinical hypothyroidism include low birth weights 28.12%; Intra uterine growth retardation 12.8%; still had born 12.6%; Jaundice 11.24% subclinical hypothyroidism in pregnancy is associated with neonatal complications and maternal complications. **Conclusion:** Subclinical hypothyroidism is associated with maternal and foetus complications. Screening for serum TSH and FT4 is essential to prevent the maternal and foetus complications.

Keywords: Subclinical hypothyroidism; pregnancy; hypothyroidism, complications, serum TSH.

Corresponding Author: Dr. Rathlawath Swapna Assistant Professor, Department of Obstetrics & Gynaecology, RVM Medical College, Siddipat, Telangana

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Introduction

Subclinical hypothyroidism and hypothyroidism are very common endocrinal disorders in female. Thyroid gland secretes two major hormones 1 is thyroxine and triodo Thyronine commonly called as T₄ and T₃. Thyroid secretion is controlled primarily by thyroid stimulating hormone which is secreted by ant pituitary gland. To from normal quantities of thyroxine 1mg/week of iodine is required in the form of iodide. The steps in the synthesis of thyroid hormone are 1) Iodide trapping 2) Oxidation of iodine ion 3) Organification of thyroglobulin 4) Release of T₃ and T₄ into blood.^[1,2]

The general effects of thyroid hormone is to activate transcription of large no. of genes. The thyroid receptors are either attached to DNA generic stands or located in proximity to them.^[3,4] An important effect of thyroid hormone is to promote growth and development of brain during foetus life and first few years of post-natal life.

Pregnancy is associated with significant modification of thyroid function the physiological changes in pregnancy are mainly due to increased level of thyroid binding globulin (TBG) by marked elevation of or estrogen and Huma chronic gonadotropin increased level blood flow and glomerular filtration rate leading to increased iodide clearance from plasma which causes decreased thyroid

hormone release resulting in some degree of organ hypertrophy induced by increased thyroid stimulating hormone.^[5] Subclinical hypothyroidism is called when thyroid stimulating hormone is slightly increased where ad T₃ and T₄ are normal prevalence of subclinical hypothyroidism complicating pregnancy has been reported as 1.8% to 2.7% subclinical.^[6] Subclinical hypothyroidism can be diagnosed by screening tests during early pregnancy. The complications associated with over Hypothyroidism and subclinical hypothyroidism is preterm labor; preeclampsia abrupt placenta, low birth weight babies, increased incidence of neonatal hypothyroidism and intra uterine growth retardation.

Subjects and Methods

This study was conducted during the period of 2017 and 2018. We have included pregnant mothers in this study after care full history taking and clinical examinations, Blood sample was sent to T₃T₄TSH subjects who use are diagnosed as hypothyroidism and who are on treatment were excluded from this study. 18 antenatal women were diagnosed as subclinical hypothyroidism according to serum TSH levels, Remaining 417 were having normal thyroid function tests other conditions like multifractal pregnancy, diabetes mellitus and other autoimmune

disorders were also excluded from this study obstetrical examination regarding presentation, position, gestation age, amount of liquor was done. The gestation age calculated on the basis of women first day of last menstrual period (LMP) with ultrasound examination to rule out any discrepancies between fundal heights and LMP

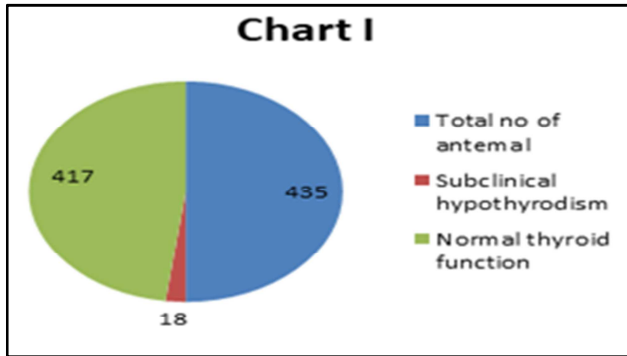


Table 1:

| Total no of antenatal | Subclinical hypothyroidism | Normal thyroid function |
|-----------------------|----------------------------|-------------------------|
| 435 | 18 | 417 |

Examination of new born was done immediately after birth to note body weight, AP gas score and any congenital anomaly follow up was done for both babies and mothers till discharge antenatal mothers serum TSH and FT₄ levels were TSH was measured at 36-38 weeks of gestational age, serum TSH was measured using a solid phase two site chemiluminescent enzyme immune metric array euthyroid was defined as normal TSH (0.2-0.3M1μ/L). Subclinical hypothyroidism is defined as TSH > 3M1μ/L with normal level of T₄ 0.8 -2ng/dL (7) and TSH was measured after 48 hours to 7 days following delivery for new born. BMI was calculated from height and weight Kg/m². Pre-eclampsia is defined as persistent rise of BP>140/90mmHg after 20 weeks of pregnancy on more than 2 occasions with proteinuria. IUGR is considered when birth weight was less than 10th percentile for gestational age low birth weight was defined as weight <2500gms. Still birth is defined as death of fetus at or after 28 weeks of gestation or at the time of birth.

Results

Age, BMI, HB% concentration were compared with both the groups of antenatal mothers the mean BMI is 23.16 ± 2.13 for euthyroid pregnant women and 22.26±2.24 for subclinical hypothyroid antenatal mothers. Subclinical hypothyroidism was significantly associated with pre-eclampsia () abruptio placenta () IUGR () Sepsis is also increased in pregnant women with subclinical hypothyroidism

Table 2:

| | In Euthyroid Mothers | In Subclinical Hypothyroid |
|---------------|----------------------|----------------------------|
| Pre-eclampsia | 1.8% | 13.25% |

| | | |
|-------------------|--------|--------|
| abruptio placenta | 0.94% | 6.45% |
| Low birth weight | 23.24% | 28.12% |

Majority of babies were having birth weight of 2.5 Kgs and above. Foetus complications in subclinical hypothyroidism includes jaundice 12.4%, Respiratory distress syndrome 9.6%, Sepsis 12.6% other neonatal complications 24.16%

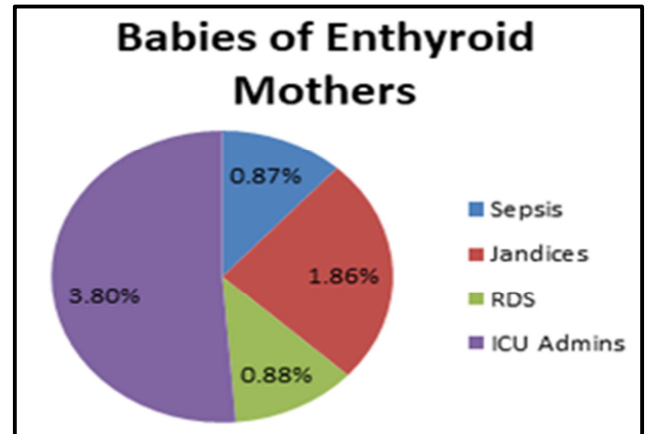
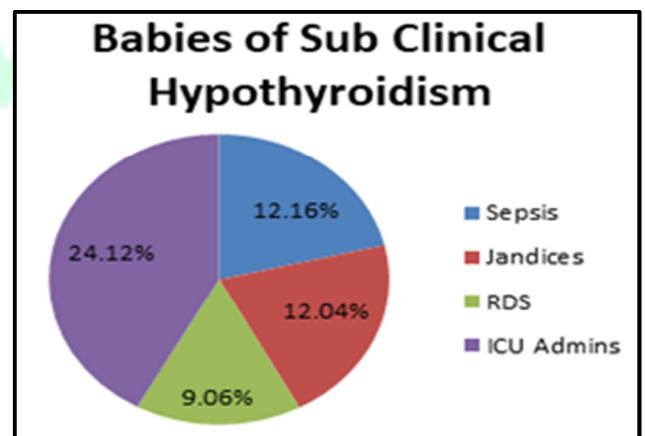


Table 3:

| | Sepsis | Jaundices | RDS | ICU adms |
|--------------------------------------|--------|-----------|-------|----------|
| Babies of euthyroid mothers | 0.87% | 1.86% | 0.88% | 3.8% |
| Babies of subclinical hypothyroidism | 12.16% | 12.14% | 9.6% | 24.116% |



The TSH levels were increased from 5.14 M1μ/L to 6.48 M1μ/L in subclinical hypothyroidism antenatal mothers.

Discussion

Thyroid dysfunction is very common disease in women especially during pregnancy and it will cause many problems to mother and baby so thyroid screening is very much important during early pregnancy. Thyroid hormone levels play an important role in neurophysiological development of fetus. In our study thyroid stimulating

hormone is increases up to $6.2\text{M}\mu\text{L}$. and prevalence of subclinical hypothyroidism is 4.15%, The study conducted in India shows the 8.6% of prevalence in pregnant mothers. According to study conducted by gassy Et al is 2.3% in pregnant women. The study conducted by ajamani Et. Al shows that increased maternal age has higher incidence of thyroid dysfunction and increase in prevalence of overt hypothyroidism the complication of subclinical hypothyroidism in pregnant women are abruptic placenta, pre-eclampsia, oligo hydroniums. Anemia is also common. In pre-eclampsia accidental hemorrhage is more common than euthyroid antinatal women.^[8,9] It also causes foetus distress in labor and still birth is also more common especially when thyroid stimulating hormones is increases up to $>6\text{M}\mu\text{L}$, According to study conducted by aften foetus death is increased in subclinical hypothyroidism pregnant mothers. Thyroid hormone is important in placental development. It is also important in neurophysiological development in foetus so deficiency of thyroid hormone may causes neurological development abnormalities.^[10,11]

Conclusion

The subclinical hypothyroidism is pregnant women is a common disorder most of the time it is asymptomatic so early detection of TSH is necessary to prevent the complication in mothers and babies.

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