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Original Research Article

## A prospective study of hypothyroidism during pregnant attending tertiary care hospital in south India

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### ABSTRACT

**Background:** Disorder of thyroid function is common during pregnancy and hypothyroidism is more common than hyperthyroidism affecting 3–5% of all pregnant women. Maternal hypothyroidism is associated with both maternal adverse effects like preeclampsia, eclampsia, pregnancy induced hypertension and gestational diabetes mellitus and foetus complication like low birth weight, pre term birth, neurological deformities and abnormal presentation.

**Methods:** In present study 120 patients with overt and subclinical hypothyroidism were included in this study. Detailed histories of patients were taken and clinical examination was done and data was collected in a predesigned Performa. We used standard diagnostic criteria for diagnosis of overt and subclinical hypothyroidism.

**Results:** Pregnancy induced hypertension was found in 10% patient, Chronic hypertension was present in 1.6% patients, abortion in second trimester 1.6% patients, incomplete abortion in 4.18% patients. Missed abortion was present in 2.5% patients.

**Conclusions:** Hypothyroidism during pregnancy is more common in primi. Most common age group was third decade and was commonly detected before 10 weeks of gestation. Pregnancy induced hypertension, oligohydramnios and preterm delivery was more common than abortion in second trimester and missed abortion.

**Keywords:** Complications, Hypothyroidism, Pregnancy

### INTRODUCTION

Normal functioning of thyroid gland is essential during pregnancy for both mother and growing foetus. For normal growth and development of foetus adequate transplacental transfer of thyroid hormone is essential as synthesis and secretion of thyroid hormone in foetus start only after 20 week of gestation.<sup>1,2</sup> Disorder of thyroid function is common during pregnancy and hypothyroidism is more common than hyperthyroidism affecting 3–5% of all pregnant women.<sup>3,4</sup> There are various factor which is responsible for abnormal thyroid function like during pregnancy there occurs increase in thyroid hormone binding globulin (TBG) level which increase the need for T3 and T4 production throughout pregnancy. There is increased degradation of thyroid hormone by placental, chorion, and amnion type 3 inner

ring deiodinase. Serum thyroid antibody positivity is also common during pregnancy.<sup>5-7</sup>

There is a well established association between maternal hypothyroidism and adverse outcome of pregnancy.<sup>8,9</sup> Maternal hypothyroidism is associated with both maternal adverse effects like preeclampsia, eclampsia, pregnancy induced hypertension and gestational diabetes mellitus and foetus complication like low birth weight, pre term birth, neurological deformities and abnormal presentation.<sup>10,11</sup>

Dhanwal DK, Bajaj S, Rajput R, et al in their prevalence study from 11 cities in 9 states of India has concluded that there is a high prevalence of hypothyroidism (13.13%), in pregnant women during the first trimester from India and universal screening of hypothyroidism

may be desirable in our country.<sup>12</sup> Kalra B, Choudhary M, Thakral M, Kalra S et al has concluded that Hypothyroidism is common in term pregnancies. If treated adequately, healthy fetomaternal outcomes can be achieved.<sup>13</sup>

Present study has been undertaken to know the prevalence of hypothyroidism in our region and its presentation and also to follow the patients till delivery after adequate treatment.

## METHODS

### Place of study

Present study has been conducted in the department of obstetrics and gynaecology Konaseema institute of medical science Amalapuram Andhra Pradesh India.

### Duration of study

It has been conducted from January 2018 to August 2020.

### Type of study

This is a prospective observational study.

### Selection of patients

All pregnant women attending antenatal outpatient department for their first antenatal check-up were approached and in addition to routine lab investigation thyroid function test was advised. Out of them patients were selected based on following inclusion and exclusion criteria.

### Inclusion criteria

- 1) All singleton pregnancy in first and second trimester
- 2) Overt and subclinical patients with or without treatment

### Exclusion criteria

- 1) Multiple pregnancies
- 2) Gestational diabetes mellitus

### Sample size

Based on above criteria 120 patients were enrolled for this study.

### Method

In present study 120 patients with overt and subclinical hypothyroidism were included in this study. Detailed histories of patients were taken and clinical examination

was done and data was collected in a predesigned Performa. We used standard diagnostic criteria for diagnosis of overt and subclinical hypothyroidism 15, 16. For estimation of thyroid hormone we used radioimmunoassay and Solid Phase Two-Site ImmunoRadoMetric Assay technique. All women enrolled for this study were followed for till delivery to see that they develop any complication and know the outcome of pregnancy. All patients were treated as per standard treatment protocol.

### Statistical analysis

Data were recorded in excel sheet and statistical Analysis was done with software SPSS-14 version. Data were calculated as percentage and proportions.

## RESULTS

In present study during study period 980 patients attending obstetrics outpatient department were evaluated for hypothyroidism out of them 120 patients with hypothyroidism were enrolled for this study.

**Table 1: Clinical and demographic profile of the patients with hypothyroidism.**

Variables	Frequency	Percentage	
Age in years	Less than 20	16	13.3
	21 to 30	25	20.83
	31 to 40	53	44.16
	More than 41	26	21.66
Gestational age	Less than 10 wks	96	80
	More than 10 wks	24	20
Gravidity	primi	78	65
	multi	42	35
Serum TSH in mIU/ml	3 to 5	12	10
	5 to 10	76	63.3
	More than 10	32	26.3
Treatment status at admission	Treated	72	60
	Not treated	48	40

As per table regarding clinical and demographic profile of patients 13.33% patients were below 20 year of age, 20.83% patients were between 21 to 30 years of age, 44.16% patients were between 31 to 40 years of age and 21.66% of patients were above 41 year of age. In this study 80% patients were below 10 weeks of gestation and 20% were above 10 weeks of gestation. Regarding gravidity of patients 65 % patients were primi and 35% patients were multi. Serum TSH was between 3 to 5

mIU/ml in 10 % patients, 5 to 10 mIU/ml in 63.3% and more than 10 mIU/ml in 26.3% patients. At the time of admission 60% patient were taking treatment and 40 % patient were not treated.

**Table 2: Complication in patients with hypothyroidism during pregnancy.**

Variables	Frequency	Percentage
Frequency of Complication	absent	78
	Present	42
Pregnancy induced hypertension	12	10
Chronic hypertension	2	1.6
Abortion in second trimester	2	1.6
Incomplete abortion	5	4.18
Missed Abortion	3	2.5
Preterm delivery	16	13.33
Oligohydramnios	12	10

As per table 2, regarding complication in patients with hypothyroidism during pregnancy 65% of patients have developed complication. Pregnancy induced hypertension was found in 10% patient, Chronic hypertension was present in 1.6% patients, abortion in second trimester 1.6% patients, incomplete abortion in 4.18% patients. Missed abortion was present in 2.5% patients. Preterm delivery and oligohydramnios was present in 13.33% and 10 % patient respectively.

**Table 3: Mode of delivery in patients with hypothyroidism.**

Variables	Frequency	Percentage
Normal vaginal delivery	58	48.33
Preterm	16	13.33
Forceps	2	1.66
Elective CS	34	28.33
Emergency CS	20	16.66

Regarding mode of delivery of patients with hypothyroidism, 48.33% have normal vaginal delivery, 13.33% have normal vaginal delivery, and 1.66 % has forceps assisted delivery. Elective CS was mode of delivery in 28.33% and emergency CS was mode of delivery in 16.66%.

**DISCUSSION**

We have evaluated 980 women with pregnancy for hypothyroidism during our study period of two years and eight months and observed that 12.22% women have hypothyroidism. Dhanwal DK, Bajaj S, Rajput R, et al has reported from his multicentric study that prevalence of hypothyroidism during pregnancy in India to be 13.13% and in Andhra Pradesh to 8.94% which is little less than our study but close to whole India prevalence.<sup>12</sup> Korde

VR, Barse SP, Barla JS et al has reported that in his study the prevalence was 14% which is similar to our study.<sup>16</sup>

We have observed that hypothyroidism during pregnancy is more common in primi. Most common age was from 31 to 40 years and was commonly detected before 10 weeks of gestation which is supported by the work of Vimal Nambiar, Varsha S. Jagtap, Vijaya Sarathi et al.<sup>17</sup> In present study most of the patient TSH was between 5 to 10 mIU/ml and at the time of admission 60% patient were taking treatment and 40 % patient were not treated. Which is supported by the work of Vimal Nambiar et al and Teng X, Shan Z, Chen Y, Lai Y, Yu J, Shan L, et al.<sup>17,18</sup> In our study pregnancy induced hypertension, oligohydramnios and preterm delivery was more common than abortion in second trimester and missed abortion. This finding corroborates with the study of Tudosa R, Vartej P, Horhoianu I, Ghica C, Mateescu S, Dumitrache I et al and Casey BM, Dashe JS, Wells CE, et al.<sup>19,20</sup>

Regarding mode of delivery in our study normal vaginal delivery was most common (48.33%). Tudosa R, Vartej P, Horhoianu I, Ghica C, Mateescu S, Dumitrache I et al has reported that spontaneous delivery was 53.33% which is little higher the our study. Elective CS was mode of delivery in 28.33% and emergency CS was mode of delivery in 16.66% which is less than the study of Tudosa R, Vartej P et al.<sup>19</sup> Casey BM, Dashe JS, Wells CE, et al has concluded that Preterm birth, defined as delivery at or before 34 weeks of gestation, was almost 2-fold higher in women with subclinical hypothyroidism which support our study.<sup>20</sup>

**CONCLUSION**

From our study we can conclude that the prevalence of hypothyroidism in our region was 12.22%. Hypothyroidism during pregnancy is more common in primi. Most common age group was third decade and was commonly detected before 10 weeks of gestation. Pregnancy induced hypertension, oligohydramnios and preterm delivery was more common than abortion in second trimester and missed abortion. Normal vaginal delivery was common then elective or emergency CS.

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