

Prevalence of Hypothyroidism in Term Pregnancies in North India

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Abstract

Background: Hypothyroidism is common in pregnancy. No study has determined the prevalence of hypothyroidism in term pregnancies in India. **Aim:** This study aims to determine the prevalence and correlates of hypothyroidism in women who delivered at a center in Karnal, Haryana, North India. **Results:** Indoor records of all women who had delivered at this centre from April 2016 to March 2017 were reviewed. The prevalence of hypothyroidism was 12.3%, of which 15.5% were diagnosed during pregnancy. The dose requirement of L-thyroxine ranged from 25 to 200 µg (mean 76.38 ± 43.02). With this, 80% were able to achieve trimester-specific thyroid-stimulating hormone targets. Hypothyroidism did not correlate with any medical or obstetric complications. **Conclusion:** Hypothyroidism is common in term pregnancies. If treated adequately, healthy fetomaternal outcomes can be achieved.

Keywords: Delivery, epidemiology, hyperthyroidism, hypothyroidism, India, pregnancy

INTRODUCTION

Thyroid disorders, especially hypothyroidism, are commonly noted in women of reproductive age. The screening, diagnosis, and management of hypothyroidism in pregnancy is a matter of debate.^[1-3] Much work has been done in India to assess the burden of hypothyroidism during pregnancy. Most studies on this aspect of epidemiology have focused, on women in the first trimester, though some have included women of all gestational periods.^[4-12]

No Indian study, however, has assessed the prevalence of hypothyroidism in women at term. No study has attempted to describe treatment patterns or dose requirement of L-thyroxine in this cohort. This information is important, as it offers a realistic idea of management to obstetricians who manage labor and delivery. It is also more relevant, as first trimester and second trimester data may be skewed by physiological alterations in thyroid physiology that occur during these periods. Hence, the current study was planned to determine the prevalence of hypothyroidism in women presenting for delivery at a maternity center in Karnal, Haryana.

Objective

The aim of this study was to determine the prevalence of hypothyroidism and hyperthyroidism, in pregnancies

reaching term. The secondary objective was to assess if hypothyroidism was associated with unique clinical features of complications.

MATERIALS AND METHODS

The present study was conducted as a retrospective review at a maternity center in Karnal, Haryana, North India. Indoor records of all women who had delivered from April 2016 to March 2017 were reviewed. All these participants had received regular antenatal care from the same center as “booked” patients. All had their thyroid-stimulating hormone (TSH) determined at least once during pregnancy, using commercially available chemiluminescence assays. The TSH value was interpreted as per the American Thyroid Association recommended trimester-specific cut offs, and treated accordingly. The last recorded TSH values were used for analysis. The last TSH values, if recorded at or after 36 weeks gestation, were analyzed separately as well. Thyroid antibodies were not assessed.

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RESULTS

A total of 569 records were reviewed as part of this study. All participants had their TSH measured at least once during the antenatal period, as part of routine obstetric care. Of the 569 women included 4.2% ($n = 24$) were illiterate, 7.0% ($n = 40$) had not completed matriculation, 16.0% ($n = 91$) were 10th pass, 30.6% ($n = 174$) were graduates, and 41.7% ($n = 237$) were postgraduates. The mean age was 27.33 ± 3.78 years. A total of 42.8% ($n = 243$) were primigravida, 27.8% ($n = 158$) were second gravida, 16.0% ($n = 91$) were third gravida, and 13.4% were grand multipara. Parity was one in 215/326 (%) ($n = 215$) and two in 48/326 (%) ($n = 48$) of the multigravid expectant mothers.

History of one pregnancy loss was reported in 19.7% ($n = 112$), two losses in 8.4% ($n = 48$), and three or more losses in 2.9% ($n = 16$) women. Of the 569 women, 59.1% ($n = 336$) delivered vaginally. While 40.9% ($n = 233$) underwent cesarian section, the vast majority (93.8%; $n = 534$) had cephalic presentation, with 6.2% ($n = 35$) exhibiting breech presentation. A total of 52.9% ($n = 301$) delivered singleton boys, 46.0% ($n = 262$) delivered singleton daughters, while 1.1% ($n = 6$) mother had twins. Two deliveries ended in still birth.

Of all these participants, 12.3% ($n = 70$) were being treated for hypothyroidism. Eleven patients (15.7%) were diagnosed to have hypothyroidism during pregnancy, while 59 (84.3%) had been on treatment before conception. Their last recorded mean TSH was 4.48 ± 5.064 μ IU/ml, and the dose of thyroxine varied from 25 to 200 μ g (mean 76.38 ± 43.02 μ g). One patient was a diagnosed case of hyperthyroidism, on 10 mg carbimazole/day.

TSH values were available at term (36 weeks and above period of gestation) for 31 women. In these, the mean

TSH was 1.71 ± 0.844 , with a range of 0.11–21.8 μ IU/ml. All participants except 13 had a TSH within the trimester specific range suggested by the American Thyroid Association (0.3–3.0 μ IU/ml). Of these, two had a TSH <0.3 while eleven had a TSH >3.0. The age, educational qualification, gravity, parity, and number of pregnancy losses did not vary significantly between hypothyroid and euthyroid participants. No difference was noted in mode of delivery or gender of offspring between these two groups, either.

DISCUSSION AND CONCLUSION

Variable prevalence of hypothyroidism in pregnancy has been reported from various parts of the country. Table 1 lists recently published data on this aspect of thyroidology.^[4-17] It must be noted that there is a wide heterogeneity in results, probably due to differing TSH cut offs for diagnosis. Some studies with uncertain or unreliable methodology have not been included in the table.^[18,19]

Within the 11 city study too, there is great variability between cities. The prevalence of hypothyroidism, as assessed by centralized investigations, ranges from 39% in Srinagar to 7.8% in Bengaluru.^[4] The authors did not report city-specific prevalence of antibody positivity, though this could have provided meaningful insight into the epidemiological features.

Our study reveals a prevalence of 12.3% of diagnosed and treated hypothyroidism in pregnant women at term. The present study, however, differs from all earlier research and adds value to existing knowledge on the subject. It is conducted at a peripheral center, in women presenting for delivery after having received regular antenatal care, in an iodine-replete area. It provides a realistic idea of the prevalence of treated

Table 1: Prevalence of hypothyroidism in pregnancy in India

<i>n</i>	Author/year	City	Period of gestation	Prevalence of hypothyroidism (%)	Upper cut off of TSH (μ IU/ml)
163	Rao <i>et al.</i> , 2008 ^[6]	Hyderabad	RPL, first trimester	4.12	5.0 (IRMA)
495	Gayathri <i>et al.</i> , 2009 ^[7]	Chennai	Up to 36 weeks	2.8	5.0
633	Sahu <i>et al.</i> , 2010 ^[8]	New Delhi	High-risk second trimester	6.47	Not mentioned in abstract
483	Nambiar <i>et al.</i> , 2011 ^[9]	Mumbai	First trimester	4.8	4.0
139	Bandela <i>et al.</i> , 2013 ^[10]	Nandyal, Andhra Pradesh	First trimester	12.87	4.0
143	Dhanwal <i>et al.</i> , 2013 ^[5]	New Delhi	First trimester	14.3	4.5
400	Ajmani <i>et al.</i> , 2014 ^[11]	New Delhi	Second trimester	12.0	3.0
	Aggarwal <i>et al.</i> , 2014 ^[12]	Chandigarh		10.9	4.5
1152	Bose <i>et al.</i> , 2015 ^[13]	Indore	First trimester, excluding known thyroid disorders	13.1	2.5
388	Dhanwal <i>et al.</i> , 2016 ^[4]	11 cities/8 states	Any gestation; 19.3 \pm 15.9 W	13.13; 36.07	4.5; ATA trimester specific
816	Shivanagappa <i>et al.</i> , 2016 ^[14]	Mysore	Indoor, all trimesters	17.0	3.0
510	Mandal <i>et al.</i> , 2016 ^[15]	Kolkata	First trimester	32.94; 13.92	2.5; 4.5
260	Murty <i>et al.</i> , 2017 ^[17]	Ranga Reddy, Hyderabad	All trimesters	19.41	3.0
615	Goel <i>et al.</i> , 2017 ^[16]	Ghaziabad	First trimester	33.8	2.5

TSH: Thyroid-stimulating hormone, RPL: Recurrent pregnancy loss, IRMA: Immunoradiometric assay, ATA: American thyroid association

hypothyroidism in the labor room, and the wide range of thyroxine requirement in expectant mothers.

While it does not analyze TSH levels at the time of diagnosis, or secular trends in dose requirement for hypothyroidism, the results suggest that euthyroidism can be achieved in most antenatal women. The high prevalence of hypothyroidism also suggests that universal screening must be offered to all expectant mothers. This is supported by the fact that 15.7% of all hypothyroid women were diagnosed after conception.

Our reported prevalence is lower than that reported from neighboring cities of New Delhi (16.21%; 14.3%) and Rohtak (19.4%).^[4,5] It is possible that the prevalence of hypothyroidism in our region may be higher during the first and second trimesters. This is because the current study has not tried to identify women with pregnancy loss, or women who may have received antenatal care at our center, but opted to deliver elsewhere. At the same time, however, the prevalence of hypothyroidism may be higher in our cohort, as our study center works in the same hospital as an endocrine clinic. Keeping these balancing factors in mind, we feel that our results portray a realistic picture of the prevalence of hypothyroidism in pregnancy in India.

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Conflicts of interest

There are no conflicts of interest.

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