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ORIGINAL ARTICLE

Biochemical Parameters of Thyroid Profile in Relation to Pregnancy in Last Trimester

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ABSTRACT

Introduction: Thyroid hormones are basic for foetal development during pre and after birth period. During pregnancy, expanded amalgamation of thyroid hormones is required to meet fetal requirements, which leads to tall necessity of iodine. Pregnancy could be a stress for thyroid organ; it influences 3% women amid pregnancy and 10% ladies of child bearing age. About 18-20% of Australian ladies have thyroid counter acting agent positive test during first trimester of pregnancy.

Objective: To study the relationship of thyroid profile parameters in relation to Pregnant females in last trimester of pregnancy

Material and Methods

Study design: Cross sectional

Settings: Holy Family Hospital Rawalpindi

Duration: 6 months, 1st July 2021 to 31st December 2021

Data Collection Procedure: A cross sectional study was conducted on 50 patients. The study was conducted in Holy Family Hospital Rawalpindi. Ethical approval was taken from ethical committee. An educated consent was taken from the participants. Study members were pregnant mothers with pregnancy going to antenatal clinic during last trimester of pregnancy. All subjects were examined for any indications and signs of hypothyroidism and hyperthyroidism. This was cross-sectional study Simple convenient sampling technique was applied and sample was calculated using classical test estimate calculation equation of Cochran. Thyroid profile parameters were assessed by ELIZA strategy.

Results: A group of fifty healthy pregnant females was selected. The mean age of pregnant females of maternal group was 28.5+6.5. Mode of delivery in females as 28(56%) normal spontaneous vaginal delivery and 22(44%) undergoes C-section. Standard error of mean, Standard deviation and percentile values were calculated in maternal group of females.

Conclusion: Trimester particular reference ranges of TSH, FT4 and FT3 of our study were lower than international recommenced levels of 2017 Guidelines of American Thyroid Affiliation. These values may be utilized to compare thyroid disease in pregnancy in our area

Keywords: Thyroid Profile, T3, T4, TSH, Hormones, Pregnancy

INTRODUCTION

Numerous studies have illustrated that maternal thyroid dysfunction can have an antagonistic effect on both mother and child. Recent publications have appeared that early maternal thyroid insufficiency, even subclinical hypothyroidism elevated TSH with normal free thyroxine T4 and confined hypothyroxinemia (normal TSH with lower T4) have the potential to disable foetal neurodevelopment[1,2]. Expanding consideration has hence focused on the determination and treatment of maternal thyroid dysfunction during pregnancy. A later agreement articulation on clinical rules for the administration of thyroid issues during pregnancy and the postpartum period has been supported by a few important societies. During pregnancy, expanded thyroxine-binding globulin (TBG) and human chorionic gonadotrophin (hCG) can individually influence add up to thyroxine (T4) and add up to triiodothyronine (T3), and TSH concentrations Pregnancy may be a stress for thyroid organ. After decades of research it is suggested that normal reference ranges of thyroid hormones test during different stages of pregnancy are necessary. Thyroid hormones are basic for foetal development during pre and after birth period[3,4]. During pregnancy, expanded amalgamation of thyroid hormones is required to meet fetal requirements, which leads to tall necessity of iodine. Pregnancy could be a stress for thyroid organ; it influences 3% women amid pregnancy and 10% ladies of child bearing age. About 18-20% of Australian ladies have thyroid counter acting agent positive test during first trimester of pregnancy. Foundation of normal reference ranges of thyroid hormones amid diverse stages of pregnancy is essential. Non-pregnant references values ought to not be utilized for elucidation of laboratory results of pregnant ladies. Trimester specific references of thyroid functions tests are not considered within the research facilities[5]. Intensive research has been conducted around the world to create reference ranges of thyroid hormones during each trimester of pregnancy. In case of non-availability of population based thyroid function tests reference levels, trimester particular TSH reference intervals ought to be practiced as prescribed by the international guidelines of the Endocrine Society, irrespective of laboratory methodology[6,7].

MATERIAL AND METHODS

A cross sectional study was conducted on 50 patients. The study was conducted in Holy Family Hospital Rawalpindi. Ethical approval was taken from ethical committee. An educated consent was taken from the participants. Study members were pregnant mothers with pregnancy going to antenatal clinic during last trimester of pregnancy. All subjects were examined for any indications and signs of hypothyroidism and hyperthyroidism. Fifty (50) subjects satisfying the choice criteria were included in the study. Test size was calculated using classical test measure equation. Subjects having goiter were assessed on clinical examination for hypothyroidism, hyperthyroidism avoided from the study. Subjects were chosen amid final trimester of pregnancy. A pre-tested organized survey was used as information collection tool for meet and Clinical examination. History of thyroid surgery and medication used for thyroid was taken. Blood samples were taken to check the results for thyroid profile. Data was entered on SPSS version 23 and analyzed.

RESULTS

A group of fifty healthy pregnant females was selected. The mean age of pregnant females of maternal group was 28.5+6.5. Mode of

delivery in females as 28(56%) normal spontaneous vaginal delivery and 22(44%) undergoes C-section. Standard error of mean, Standard deviation and percentile values were calculated in maternal group of females.

In table 1 Mean FT3 range was 1.80+1.756, Mean FT4 range was 1.295+1.025,

Mean TSH range was 1.852+0.945.

In Table 2 Percentile values of FT3 5th, 50th and 95th as 0.815, 1.210 and 8.102, Percentile values of FT4 5th, 50th and 95th as 0.750, 0.850 and 5.250, Percentile values of TSH 5th, 50th and 95th as 5.75, 1.850 and 3.645.

Table 1: Comparison of Mean, Standard deviation and SEM (n=50)

No.	Parameter	Mean±SD	Standard Error of Mean	Range
1	FT3 pmol/l	1.80+1.756	0.420	0.850-12.540
2	FT4 ng/dl	1.295+1.025	0.215	0.80-5.450
3	TSH mIU/l	1.852+0.945	0.176	0.540-3.50

Table 2: Percentile values of thyroid profile in study group (n=50)

No	Variables	Percentile						
		5th	10th	25th	50th	75th	90th	95th
1	Serum FT3 pmol/l	0.815	0.850	0.900	1.210	1.570	3.450	8.102
2	Serum FT4 ng/dl	0.750	0.840	0.920	0.950	1.130	2.450	5.250
3	Serum TSH mIU/l	5.75	0.820	1.110	1.850	2.456	3.345	3.645

DISCUSSION

Our findings affirm those of other authors that changes in thyroid hormone levels during pregnancy in last trimester. This provides further prove of the significance of utilizing gestational age-specific intervals for assessing thyroid status in pregnant ladies[1,7,8]. It was basic to establish reference levels from study zone as no reference levels of maternal serum TSH, FT3 and sFT4 were available for Pakistani pregnant ladies, for comparison of maternal TSH, FT3 and FT4 levels of ordinary pregnant women. Numerous nations have not yet established trimester particular reference ranges of thyroid hormones among typical pregnant women. Rare information is accessible among South Asian Region countries (SARC) on trimester particular reference ranges of thyroid hormones for pregnant women, which is required for early determination and management of thyroid disorders. Trimester specific reference ranges of serum T3, TSH, FT3 and FT4 among sound pregnant ladies which are taken as standard for conclusion and treatment of thyroid disorders during pregnancy. It has been recommended that each tertiary care clinic should establish its claim trimester particular reference ranges of thyroid hormones levels based on population of that area[9]. Our study population was moreover from a tertiary care clinic which had no trimester specific reference ranges for serum TSH, T3, T4, FT3, and FT4 for comparison. These reference ranges are also not accessible on national level. So our study established reference ranges from Maternal Control Group of study for compared with other countries reference ranges and suggested levels of TSH, FT3, and FT4 by American Thyroid Association[10,11].

CONCLUSION

Trimester particular reference ranges of TSH, FT4 and FT3 of our study were lower than international recommenced levels of 2017 Guidelines of American Thyroid Affiliation. These values may be utilized to compare thyroid disease in pregnancy in our area.

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