

Study of Hypothyroidism in first trimester pregnancy in Punjab Population

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Abstract

Background: Hypothyroidism during pregnancy has an adverse effect on both mother and child. Children born untreated have profound effect on future intellectual development and mothers do have complications during pregnancy and delivery. **Method:** 92 (ninety two) pregnant women aged between 20 to 35 years having hypothyroidism were studied. BMI, CBC, Lipid-profile, BUN, serum creatinine, TSH free T4 and anti TPO antibodies test was carried out by using Roch modular kit using ECLIA technology. **Results:** BMI, GA, Cholesterol, BUN, Sr creatinine, ESR, Granulocytes and Hb% parameters had quite abnormal profile. Thyroid profile of first trimester had 6.8 (± 1.3) TSH, 0.4 (± 0.1) F T4, 13.2 (± 0.5) Anti TpoAb. **Conclusion:** This pragmatic study of hypothyroidism in First trimester of pregnancy will be a tool for physician or endocrinologist to treat such patients efficiently to avoid the risk factors to both maternal and foetus as well.

Keywords: Rochs modul-kit, Eclisa, Haemogram, Thyroid profile, Punjab

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Introduction

Pregnancy influences thyroid function in multiple ways. Not only does the maternal hypothalamic – pituitary thyroid (HPT) axis undergo a series of adjustments, the foetus develops of its active role in iodide and T4 transport and metabolism. Thus an integrated three – compartment thyroid model axis during gestation[1].

Early in pregnancy oestrogen promotes production of more highly sialylated T4 binding globulin isoform that is less rapidly degraded, resulting in increased serum T4 – binding globulin and T4 concentrations[2]. The final physiological changes results from placental de-iodination of maternal T4 which increases T4 turn over. In normal pregnant women, the thyroid gland maintains euthyroidism with only minor fluctuations in serum T4 and TSH. However in women with limited thyroid reserve, due to auto-immunity or iodine deficiency, hypothyroidism can develop[3]. Foetal thyroid development begins at 10-12 weeks of gestation and it is not complete until 18-12 weeks T4 is critical for many aspects of brain including myelination, synaptogenesis neuronal migration, axon and dendrite formation[4]. Hence it is an ideal way to rule out the thyroid profile in hypothyroid women of pregnancy in first Trimester so that thyroid supplementation can present many foetal anomalies.

Material and Method

92 (Ninety two) pregnant women aged between 20 to 35 years regularly visiting Adesh institute of Medical Sciences and research hospital Barnala road, Bathinda, Punjab-151001 were studied.

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Inclusive Criteria

The patients having the clinical features of hypothyroidism and confirmed by hormonal assay were selected for study.

Exclusion Criteria

Hyperthyroidism, malignancy of thyroid, pregnancy associated with immune compromised diseases was excluded from study.

Method

Detail history was collected from every pregnant women, Blood examination included CBC (haemogram) total cholesterol, triglycerides, serum creatinine and Blood Urea Nitrogen (BUN). TSH free T4 and anti Tpo anti bodies test was carried out using Roch modular kit using ECLIA Technology.

Duration of study was January-2019 to January-2021.

Statistical analysis

Various parameters performed during study were studied individual to get their mean value. The statistical data was carried out in SPSS software.

Observation and Results

Table-1: Clinical Manifestation of patients of hypothyroidism in pregnancy 22.8 (± 5.0) BMI, 19.2 (± 13.8) GA, 297 (± 19.5) Cholesterol, 244 (± 31.2) triglycerides, 7.30 (± 1.80) BUN, 0.928 (± 0.15) S. creatinine, 22.18 (± 23) ESR, 65.2 (± 7.12) granulocytes, 10.30 (± 1.10) Hb%

Table 1: Clinical Manifestations of Hypothyroid pregnant women

Manifestations	Mean Values
BMI	22.8 (±5.0)
GA	19.2 (±3.8)
Total Cholesterol (mg/dl)	297 (±19.5)
Triglycerides	244 (±31.2)
BUN	7.30 (±1.80)
Serum Creatinine	0.923 (±0.15)
ESR	22.18 (±23)
Granulocytes	65.29 (±7.12)
Hb% (g/dl)	10.30 (±1.10)

BMI – Body Mass Index, BUN – Blood Urea Nitrogen
 GA – Glycyrhethinic Acid, ESR – Erythrocyte sedimentation rate

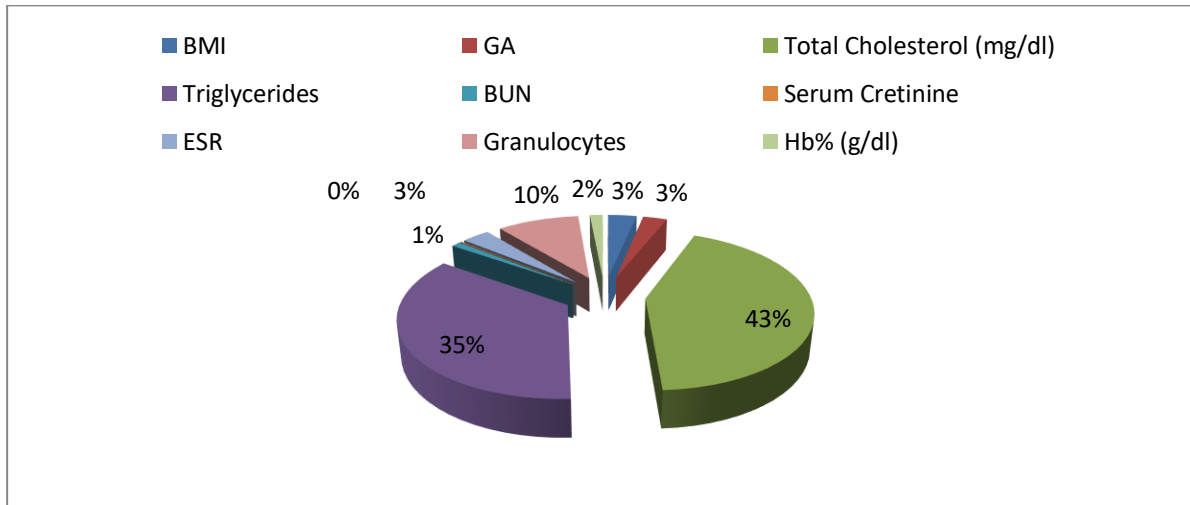


Fig 1: Clinical Manifestations of Hypothyroid pregnant women

Table-2: Thyroid profile in pregnant women: 6.8 (±1.3) TSH, 0.4 (±0.1) FT4, 13.2 (±0.5) Anti-TpoAb

Table 2: Thyroid profile pregnant women at first trimester

Parameters	First trimester
TSH (µIU/L)	6.8 (±1.3)
FT4 (mg/ml)	0.4 (±0.1)
Anti TPOAb± (IU/L)	13.2 (±0.5)

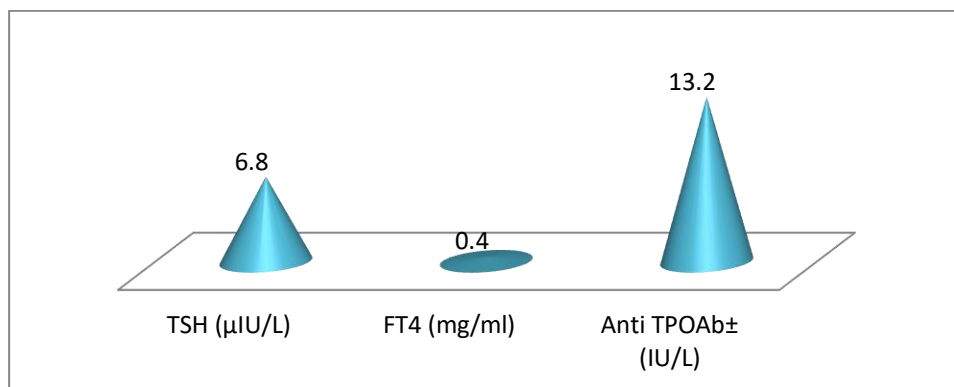


Fig 2: Thyroid profile pregnant women at first trimester

Discussion

Present study of hypothyroidism in pregnancy Mean value of BMI was 22.8 (±5.0), 19.2 (±13.8) G A (Glycyrhethinic Acid), 297 (±19.3) Cholesterol, 244 (±31.2) triglyceride, 7.30 (±1.80) BUN, 0.923 (±0.15) Sr. Creatinine, 22.18 (±23) ESR, 65.29 (±7.12) Granulocytes, 10.30 (±1.10) Hb% (Table-1). Thyroid profile was 3.70 (±10.52)

TSH, 1.12 (±0.98) FT4, 14.08 (±16.32) Anti-TPO (Table-2). These findings are more or less in agreement with previous studies[5,6,7]. It is reported that 13 to 15 % of women has hypothyroidism in first trimester pregnancy across India; Thyroid physiology is perceptibly modified during normal pregnancy. These alterations take place through gestation, help to prepare the maternal thyroid gland to cope with the metabolic demands of pregnancy, are reversible post-partum

and the interpretation of these changes can pose a challenge to the treating physician. The most notable change in Thyroxin Binding globulin (TBG) This begins in the first trimester, and persists shortly after delivery. This is due to the stimulation of TBG synthesis by elevated maternal oestrogen levels and importantly due to reduced hepatic clearance of TBG (Thyroxin Binding globulin) because of oestrogen induced sialylation[8]. Women with hypothyroidism have decreased fertility; even if they conceive, risk of abortion is increased and risk of gestational hypertension, anaemia, abruption placenta and post-partum haemorrhage is increased[9]. Untreated maternal hypothyroidism can lead to preterm birth, low birth weight, and respiratory distress in the children born to untreated hypothyroid women had less IQ and defects in intelligence[10]. The aetiology of hypothyroidism during pregnancy estimated to be 0.3 to 0.5% for overt hypothyroidism 2-3% for sub-clinical hypothyroidism. Auto-immune thyroiditis is the commonest cause of hypothyroidism during pregnancy[11]. Other causes include radioiodine ablation of thyroid while treating hyperthyroidism or thyroid cancer surgery of the thyroid tumours and rarely Central hypothyroidism including lymphocytic hypophysitis or ectopic thyroid and drugs like Rifampicin and phenytoin which accelerate thyroid metabolism, however globally iodine deficiency still remains of the leading cause of hypothyroidism both overt and sub-clinical.

Summary and Conclusion

The present study of hypothyroidism predicts risk factors both maternal and foetus also and helps to physician to treat efficiently to prevent further consequences to mother and child, but this study demands further genetic, embryological, nutritional, hormonal, pathophysiological studies because exact mechanism and factors of secretions of hormones is still unclear.

Limitation of study

Owing to the limited funds and Lack of advanced Instruments we have limited findings.

- This research paper was approved by ethical committee of Adesh Institute of Medical Sciences and research Institute Bathinda-151001 Punjab

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