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A Correlative Study Between Thyroid Hormones And Vitamin B12 In Anemic Pregnant Tribal Women In Southern Rajasthan

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Abstract

Introduction: Thyroid hormones are essential for development and normal development in adult. A low level of thyroid hormone causes anemia with directly affects erythropoietic system. The objective of our study was to assay the relationship between thyroid function and serum vitamin B12 levels in anemic pregnant tribal women in southern Rajasthan.

Aim: Aim and objective of my research study was to assay the effect of thyroid hormones with vitamin B12 in anemic pregnant tribal women in southern Rajasthan.

Materials & Methods: Research Study consisted of 100 subjects from OPD/IPD Pacific Medical College & Hospital Udaipur. The study groups were divided into two group. Group I consist of 50 anemic pregnant tribal women and Group II consist of 50 Non –anemic pregnant tribal women. The serum samples were taken from each subject and assayed for different biochemical parameters estimation.

Result: We observed there was significant correlation in between all parameters ($p<0.005$).

Conclusion: To present complication of pregnancy early screening of vitamin B12 levels will be beneficial in first trimester. Further, hypothyroidism also present.

Keywords: NIL

Introduction

Hypothyroidism is a endocrinal disorder characterized by decreased thyroid hormones in serum where T_3, T_4 level decrease & serum TSH is elevated [1,2]. Thyroid hormones regulate blood cells metabolism. Basal metabolism is the key feature of the body where each system of body is impaired .in patient of hypothyroidism, anemia can be of varied normocytic normochromic, hypo-chromic microcytic, and macrocytic. Chronic autoimmune thyroiditis is the main cause of hypothyroidism during pregnancy [3, 4]. Vitamin B12 maintains normal folate metabolism, which is essential for cell multiplication during pregnancy. Vitamin B12 deficiency is emerging as a growing public health problem, and an increasing number of studies have shown that deficiency is commonly seen in pregnancy [5]. Serum vitamin B 12 is very important and critical factor in pregnancy and affect directly the fetus and the mother. deficiency of vitamin B12 increases risk of developing intrauterine growth retardation (IUGR), preeclampsia, and preterm labor [6]. vitamin B12 deficiency is highly prevalent among hypothyroid patients. Vitamin B12 has adverse effect on the hypothyroidism. Unfortunately, both deficiencies can go unnoticed, and they can be difficult to diagnose [7]. Prevalence of deficiency of vitamin B12 increases along with the age [8]. Patients who have deficiency of vitamin B12 and hypothyroidism usually possess symptoms of fatigueness, weakness, poor memory retention, itching and loss of sensation [9,10]. Vitamin B12

regulates folic acid metabolism which is crucial for cell division and differentiation. it has been observed that Vitamin B12 is a concerning factor in public health and various studies have implied its deficiency in the pregnancy [11]. Pregnancy has a profound impact on the thyroid gland and thyroid function. The gland increases 10% in size during pregnancy in iodine-replete countries and by 20% – 40% in areas of iodine deficiency. Formation of thyroid hormone Production (T4) and (T3) increases by 50%, along with a 50% increase in the daily iodine requirement which may result in hypothyroidism [12].

Material & Method

This research study comprised of 50 cases of anemic pregnant tribal women (Group I) and 50 Non –anemic pregnant tribal women (Group II) to the Department of Gynecology Pacific Medical College & Hospital Udaipur.

Inclusion criteria:

1. The patient with anemia during pregnancy
2. 1-trimester tribal pregnant women Exclusion criteria:
3. The patient with anemia before pregnancy
4. Thyroid disorder, iron deficient, previous history of anemia, renal disease, heart disease and liver disease, cholesterol lowering patients and malnourished women who are taking anti thyroid drugs.

The study groups

1. 50 anemic pregnant tribal women
2. 50 normal pregnant tribal women
3. The pregnant women considered as anemic in following meant

Level of Hb (gm/dl)

8-10 gm/dl –mild anemic

6-8 gm/dl –moderate anemic

Less than < 6 –sever anemic

Sample Collection:

This study has been carried out in the department of Biochemistry, PMCH in association with Department of Gynecology PMCH Udaipur. The patient/subjects were selected who attended the OPD of gynecology department PMCH Udaipur and they suffered from anemia during pregnancy. control group comprises of the normal healthy pregnant women tribal in contrast to the anaemic pregnant women. The general Performa was taken as consent of the patient for the present study. The blood sample were collected in the plain vial through venipuncture of the patient and control group as well. The serum was separated from the blood through centrifugation at 3000 rmp for 15 min. and the serum was store at 2-8o C for the biochemical estimation. The following parameters has been estimated by using different

Methods: Determination of Total T3, Total T4, TSH, and Vitamin B12 Measurements of serum concentrations of Total T3, Total T4, TSH, Vitamin B12 were done using Chemiluminescence Immunosorbent Assay

Statistical analysis: Statistical analysis was done using the ANOVA TEST. The values thus obtained were tabulated and subjected to statistical analysis. The paired and unpaired t-test and Pearson Coefficient correlation (p-value) was determined between vitamin B-12and thyroid hormone.

Result: In the present study, 100 subjects were investigated out of which 50 were anemic pregnant tribal women and 50 were non-anemic pregnant tribal women. The significant correlation was found between both groups ($p<0.005$).

Table 1: The table 1 shows that there was significant correlation in between all parameters.

Table 1: Comparison of parameters in anemic and non-anemic pregnant tribal women

S.No.	Parameter	Anemic pregnant tribal women Mean ±SD	Non-Anemic pregnant tribal women Mean ±SD	P value ($p<0.005$)
1	Vit.B 12	169.96±10.76	350.940±32.382	Significant

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2	T3	4.526± 0.829	2.472 ±0.822	Significant
3	T4	66.660±10.384	167.280±10.232	Significant
4	TSH	1.475± 0.985	2.849 ±0.794	Significant

Table 2: The table 2 shows that there was significant correlation in between veg. and non-vegetarian diet in anemic and non-anemic pregnant tribal women.

Table 2: Comparison of diet in anemic pregnant tribal women

S. No.	Parameter	Anemic pregnant tribal women (Veg.) Mean ±SD	Anemic pregnant tribal women (Non-Veg.) Mean ±SD	Non-Anemic pregnant tribal women (Veg.) Mean ±SD	Non-Anemic pregnant tribal women (Non-Veg.) Mean ±SD	P value (p<0.005)
1	**Vit.B 12**	**170.8± 11.48**	**169± 10.16**	**347± 29.45**	**355.31±35.77**	**Significant**
2	**T3**	**1.21± 0.72**	**0.90± 0.51**	**2.43± 0.68**	**2.51± 0.98**	**Significant**
3	**T4**	**53.20± 10.79**	**53.64± 11.09**	**167± 9.36**	**167.63± 11.45**	**Significant**
4	**TSH**	**4.52± 0.65**	**4.33± 0.62**	**2.76± 0.83**	**2.96± 0.83**	**Significant**

The present study shows the significant link between vitamin B12 and thyroid hormone in anemic pregnant tribal women.

Discussion:

There are two hormones estrogen and human chorionic gonadotrophin hormone which influence Thyroid function tests during pregnancy (13). In addition, in pregnancy, the stimulatory effect of serum H.C.G . of placental origin, increased metabolic demand, and mental stress may play increase overall thyroid activity and elevate thyroid hormone levels. During pregnancy, increased estrogen levels cause increased production of proteins by the liver. As a result, hypatocytes increases their production of thyroid binding globulin, the protein that tranaports T4 in the circulation. High estrogen, however due to oligosaccharide modification, reduces peripheral degradation of thyroid binding globulin. As a result, the content of thyroid binding globulin in the serum is increased. In our study correlation was observed between all parameters of thyroid hormones and vitamin B12 in anemic pregnant tribal women. in anemic pregnant women it was being observed that positive correlation is seen in thyroid hormones and vitamin B12 and this is statistically significant P-value (0.000). The American Association of clinical Endocrinologist (AACE) recommended thyroid function screening for all pregnant women in their first trimester of pregnancy [14]. Many studies have been reported that altered thyroid levels were due to hypothyroidism which played key role in focalization of pregnancy induced hypertension. Early recognition of moderate rise of thyroid during early pregnancy can predict the pregnancy related complications. From the present study it is concluded that in all pregnant women serum TSH, T4, T3 and vitamin B12 in the first trimester of their pregnancy should be measured.

Conclusion: Serum level of vitamin B12 levels dips in early pregnancy itself in association with hypothyroidism. it would be quite beneficial for early diagnosis of vitamin b12 and thyroid deficiencies

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with early onset of treatment to omit deleterious effect in the pregnancy.

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