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A Study on Lipid Profile in Hypothyroidism in South India.

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ABSTRACT

Background: Hypothyroidism is a syndrome characterized by clinical and biochemical manifestations which results from decreased production of thyroid hormones. Aims and Objectives: To Study Lipid Profile of patients with hypothyroidism. **Methods:** This study conducted in 80 hypothyroidism patients in different areas in Andhra Pradesh Between Jan 2013 to Dec 2015. Hypothyroidism is diagnosed by estimation of T3T4TSH. Serum Cholesterol , serum triglycerides HDL cholesterol and LDL cholesterol were estimated. About 93% of thyroid hormone in thyroxin (T4) and 7% is Triido thyronin (T3). There are 3 deiodinase enyymes (D1 D2 & D3) D1 and D2 are responsible for peripheral conversation of T4 to T3. **Results:** The maximum incidence of age is between 20-40 years with 65%. The age group is almost same in males and female. Sex incidence is (5:1) males female ratio is 1:5. TSH is more than 12 mu/L in 80 patients The mean serum cholesterol value is more than 245 mg/dl The mean value for serum HDL is 42 mg/dl and LDL is 130 mg/dl . The mean value for serum triglyceride is 250 mg/dl. Among thyroid hormones T3 is between 50 to 70 ng/dl (normal is 95-195 ng/dl) T4 is 2-4 mcg/dl (normal is 5-11 mcg/dl) and TSH is >12 micro units/ml (normal is 0.4 to 4 micro units/ml). The Serum cholesterol is high in 50 patients (60%) 20 patients (25%) has border time and 10 patients (15%) desirable level according to ATPIII guidelines by NCEP. S. triglycerides level was high in 55 patients (70%). **Conclusion:** Hypothyroidism causes increased total cholesterol increases LDL and increased. triglycerides. This Dyslipidemia cause coronarys artery disease . So the treatment with L- thyroxine is indicated to prevent coronary artery disease.

Keywords: Serum cholesterol, Serum triglycerides, Hypothyroidism, Coronary artery disease.

INTRODUCTION

Hypothyroidism is characterized by clinical and biochemical abnormalities which results from decreased production of thyroid hormones. Biosynthesis of thyroid hormones are by iodide trapping , Oxidation of iodide ion, organification of thyroglobulin release of T3T4 into blood.[3] Decreased thyroid secretion greatly increases plasma concentration of cholesterol , phospholipids and triglycerides prevalence of Hypothyroidism is 2% in adult women and 0.1-0.02% in adult men and after 60 yrs in women it is 6-7%.[4]

Thyroid hormones stimulates carbohydrate metabolism and fat metabolism and increases based metabolism and hypothyroidism account for 2% of all cases of secondary dyslipedemia and increased LDL is sometimes caused by sub clinical hypothyroid free T4 level are correlated with the changes in LDL and HDL cholesterol. The incidence of coronary artery disease is not very high in hypothyroidism patients. The increased serum cholesterol, increased triglycerides and LDL becomes normal after the treatment with L-Thyroxive.[5,6]

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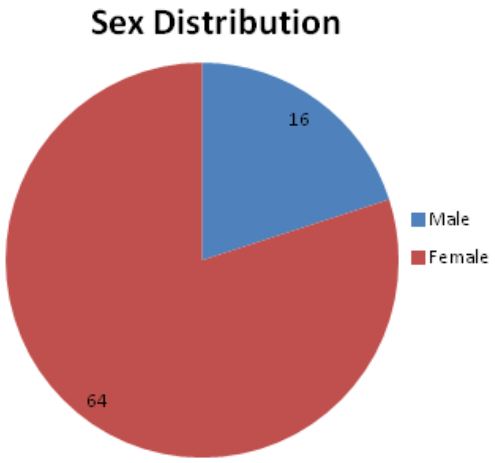


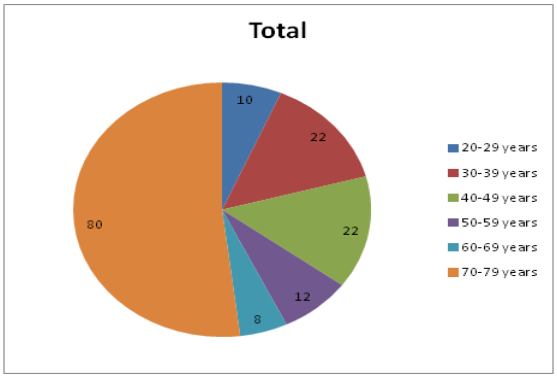
MATERIALS AND METHODS

This study was carried out during of period Jan 2015 and 2017 Dec in Rayalaseema and Telangana area of

Andhra Pradesh state in south India. Total no of patients were 80 males 16 females were 64 diagnosis was done on the basis of clinical features, thyroid function tests and Biochemical analysis . This study as included the patients with TSH more than 5 micro units and diseases which can modify cholesterol like diabetes, liver diseases and chronic Alcoholism, patient who are on statins were excluded in this study. The age group is 20 to 60 years. Detailed history was taken and clinical examination was done carefully. after clinical examination thyroid profile like T3,T4,TSH was done and blood sample were collected for lipid profile i.e. Sr cholesterol, Sr triglycerides and HDL LDL on fasting state. According to experts there is no true cholesterol normal range for serum lipids. In western population cholesterol value are about 20% higher than Asian population and exceeds 300mg/dl is nearly 5% adults about 10% adults have LDL cholesterol level above 200mg/dl total cholesterol levels tends to rise with age in persons who are otherwise in good health.[7] The triglycerides were measured by ansymatic hydrolysis based on methods of waco & modification by MC Gowan et al. serum cholesterol was measured by modified roeshalu method. the lipid profile i.e. total cholesterol, serum triglycerides, HDL cholesterol and LDl cholesterol and analyzed by using student 't' tests.

Table 1:

Age	Males	Females	Percentage	Total
20-29 years	2	8	20%	10
30-39 years	4	18	22%	22
40-49 years	6	16	20%	22
50-59 years	2	10	12%	12
60-69 years	2	6	47%	8
70-79 years	16	64	-	80



RESULTS

Male female ratios is 1:5 and the maximum incidence of age was between 30 years and 50 years- with more than 60% The mean value of total serum cholesterol is 245.3 mg/dl the mean value of HDL cholesterol is 146.5mg/dl and triglycerides are 248.2 mg/dl

The mean value of serum thyroid stimulating hormone level are more than 12mu/l.

Table 2: Analysis of lipid profile

Lipid Profile	Females	Males
Total Cholesterol	248 ± 42.0	244 ±37.12
HDL Cholesterol	47.56 ± 8.14	45.15 ± 10.22
LDL Cholesterol	147 ± 37.75	145.5 ± 40.15
Triglycerides Cholesterol	247 ± 74.22	252 ± 72.5

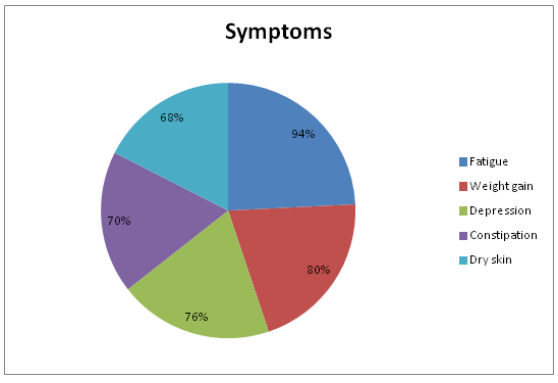
The mean total cholesterol was high with value of 245.3mg/dl the mean value for female patient is 248mg/dl and for males is 244mg/dl.

1. The mean value for HDL cholesterol is 46.4mg/dl The mean value for female patients is 47.56mg/dl for male pts is 45.15mg/dl.
2. The mean value for serum LDL cholesterol is 146.5 mg/dl.
3. The mean value for female is 147mg/dl for male pts is 145.5mg/dl
4. The mean value for serum triglycerides in 248.2mg/dl
5. The mean value for female patients is 247mg/dl for male pts is 252mg/dl.

Serum triglycerides levels was high is 70% patient border live in 18% patients and normal in 12% patients.

Table 3:

S.No	Symptoms	Male	Female	Total No.	Patients
1	Fatigue	14	60	74	94%
2	Weight gain	10	58	68	80%
3	Depression	10	50	60	76%
4	Constipation	8	48	56	70%
5	Dry skin	8	45	53	68%



DISCUSSION

In Adults hypothyroidism is gradual in on set the symptoms are non specific in nature the common symptoms are fatigue, lethargy. constipation, Dry skin, weight gain , puffiness of face, non pitting

pedal edema some authors. says that the diagnosis of hypothyroidism is done by biochemical analysis.[9] The common sign are bradycardia, pallar, sometimes slow relaxation of ankle jerk. Hypothyroidism is associated with increased cholesterol, increased incidence of peripheral vascular disease and coronary artery disease.[10] The maximum age group is between 20 years and 40 years. The Female to male ratio was 5:1. All patients of hypothyroidism were having thyroid stimulating hormone more than 12mu/ml.

The mean total cholesterol in 245.3mg/dl. The mean value for female patients was 248 mg/dl for males is 244md/dl. The mean value for HDL cholesterol is 46.4 mg/dl. The with mean value for female patients in 47.56mg/dl and for male patients 45.15 mg/dl. The mean value of serum LDL cholesterol is 146.5mg/dl, The with mean value for female patients in 147mg/dl and for male patients 145 mg/dl.

The mean value of serum triglycerides levels 248.2mg/dl. The with mean value for female patients in 247mg/dl and for male patients 252mg/dl.

serum triglycerides levels was high in 70% patients border line in 18% patients and normal in 12% serum cholesterol levels was high in 55% and border lines in 35% and desirable levels is 12% according to ATP III guidelines by NCEP. The study conducted by Om Prakesh et al shows similar results.[11,12] Obesity is associated with hypothyroidism hence weight reduction programming and regular physical exercise are advised to the patients with hypothyroidism increased serum cholesterol, increased serum LDL cholesterol is and decreases HDL serum cholesterol level also observed in patients with hypothyroidism so easily detection of hypothyroidism will help to preventions of complications like peripheral vascular disease and coronary artery disease.

CONCLUSION

Hypothyroidism causes increase in Serum cholesterol and increase in LDL cholesterol and serum triglycerides. So dyslipidaemia due to Hypothyroidism may cause cabonary artery disease. Hypothyroidism also causes pericardinal affusion. So early detection of hypothyroidism and treatment with L. Thyroxine is essential to prevent the complications.

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