ORIGINAL ARTICLE

Correlation between Thyroid Function Tests and Lipid Profile in Patients of Primary Hypothyroidism

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ABSTRACT

Aim: To correlate between thyroid function tests and lipid profile in patients of primary hypothyroidism.

Methods: Eighty subjects (both males and females) were recruited for this study. Patient group (G) (Patients of primary hypothyroidism) was of 40 subjects, while the remaining 40 subjects included were healthy subjects constituting control group (CG.). 40 subjects diagnosed as patients of primary hypothyroidism (TSH >10µIu) with age range 18-40 years were selected. 40 age, body mass index (BMI) and sex matched euthyroid subjects were selected as controls. All the subjects were having body mass index value between 20 and 25kg/m^2. All subjects were having the same socioeconomic status, dietary habits, life style and physical activity. This was evaluated through detailed interviews.
The subjects having diabetes mellitus and ischaemic were excluded. The individuals who were on any drug therapy that could alter lipid metabolism and thyroid function were also excluded. No female was postmenopausal. Subjects with body mass index value above 25 kg/m^2 were not recruited.

Results: In patients of primary hypothyroidism highly significant positive correlation was found between TSH and TC (r=0.535). In patients of primary hypothyroidism highly significant positive correlation was found between TSH and LDLc (r=0.4712). In patients of primary hypothyroidism highly significant positive correlation was found between TSH and TAG (r=0.5862). In patients of primary hypothyroidism, non-significant correlation was found between TSH and HDLc (r=0.0480).

Conclusion: In conclusion our results have proved the beneficial effects of L-thyroxine on the lipid profile of patients of primary hypothyroidism. This study has showed the decreased TC, LDLc and TAG levels after treatment. The LDLc/HDLc ratio also decreased after treatment.

Keywords: Thyroid, lipid profile, hypothyroidism

INTRODUCTION

Thyroid gland diseases are the most common endocrine disorders (Stephan et al 2001). Thyroid status is an important factor in the regulation of lipid metabolism[1]. Disorders of thyroid gland influence lipoprotein metabolism and are associated with changes in serum lipid levels resulting in ischaemic heart disease[2]. Overt hypothyroidism is associated with an increased risk of cardiovascular diseases[3]. Hypothyroidism is the generic term for exposure of the body tissues to a subnormal amount of thyroid hormones. Hypothyroidism is a risk factor for atherosclerosis and coronary heart disease due to its potential association with atherogenic lipid profile[4]. Hypothyroid condition can even cause premature atherosclerosis. In humans untreated hypothyroidism is a frequent cause of reversible hyperlipidaemia[5].

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METHODOLOGY

Eighty subjects (both males and females) were recruited for this study. Patient group (G) (Patients of primary hypothyroidism) was of 40 subjects, while the remaining 40 subjects included were healthy subjects constituting control group (CG.). 40 subjects diagnosed as patients of primary hypothyroidism (TSH >10µIu) with age range 18-40 years were selected. 40 age, body mass index (BMI) and sex matched euthyroid subjects were selected as controls. Before the start of study written consent was taken from all the subjects. All subjects were thoroughly examined. Subjects having no disease that may interfere with lipid metabolism were recruited. All the subjects were having body mass index value between 20 and 25kg/m^2. All subjects were having the same socioeconomic status, dietary habits, life style and physical activity. This was evaluated through detailed interviews.
The subjects having diabetes mellitus and ischemic were excluded. The individuals who were on any drug therapy that could alter lipid metabolism and thyroid function were also excluded. No female was

postmenopausal. Subjects with body mass index value above 25 kg/m^2 were not recruited.

Patient group: In this group 40 patients were treated with gradually increasing doses of "thyroxine" (50,100 and 150 μg/day "doses adjusted by the treating physician"), each for 20 days to achieve a euthyroid state. Then 100-150 μg/day of thyroxine was given as maintenance dose for 30 days until the post therapy fasting blood sample from the same patients was drawn.

Control group: In this group, 40 subjects age, body mass index and sex matched euthyroid were selected as control group. This group was strictly selected qualifying the above inclusion/exclusion criteria.

RESULTS

In patients of primary hypothyroidism highly significant positive correlation was found between TSH and TC (r=0.535). (Table 1and Fig 1) In patients of primary hypothyroidism highly significant positive correlation was found between TSH and LDLc (r=0.4712). (Table 1 and Fig 2) In patients of primary hypothyroidism highly significant positive correlation was found between TSH and TAG (r=0.5862). (Table 1 and Fig 3) In patients of primary hypothyroidism, non-significant correlation was found between TSH and HDLc (r=0.0480). (Table 1 and Fig 4)

Table-1: Correlation In patients of primary hypothyroidism.

Correlation between	R-value	Significance
TSH and TC	0.535	S
TSH and LDLc	0.4712	S
TSH and TAG	0.5862	S
TSH and HDLc	0.0480	NS

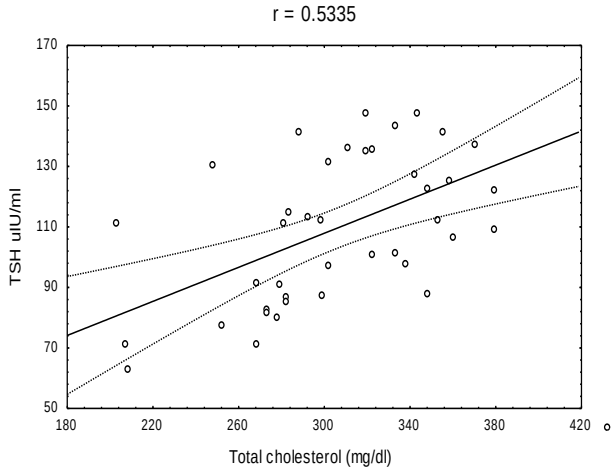

Fig 1: Correlation between TSH and TC In patients of primary hypothyroidism

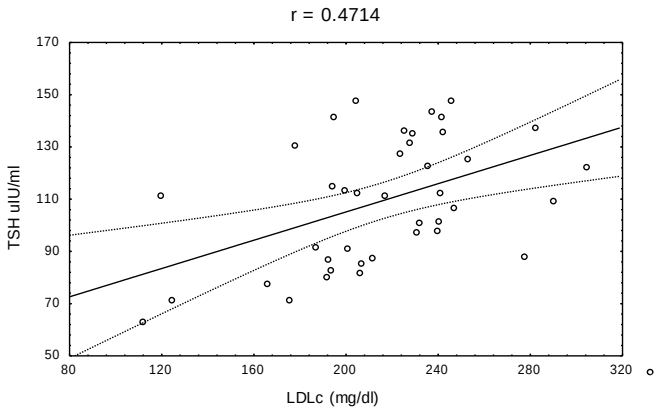

Fig. 2: Correlation between TSH and LDLc In patients of primary hypothyroidism

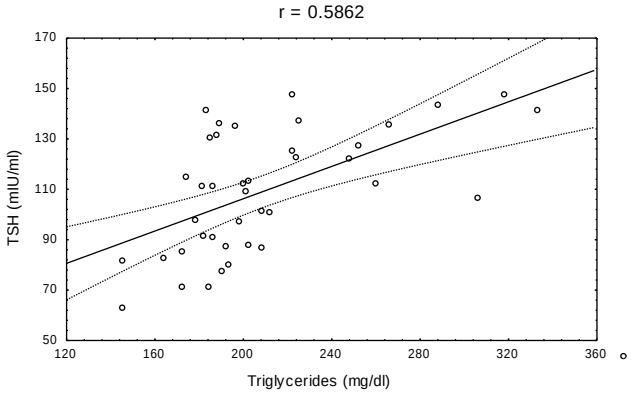

Fig. 3: Correlation between TSH and TAG In patients of primary hypothyroidism

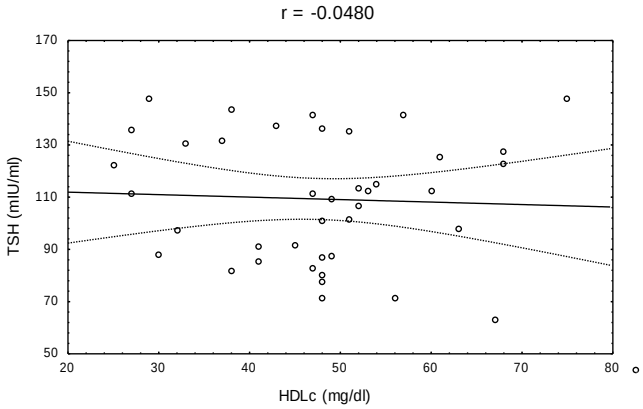

Fig- 4: Correlation between TSH and HDLc In patients of primary hypothyroidism

DISCUSSION

Correlation of TC, LDLc, TAG and HDLc with TSH in patients of primary hypothyroidism: A statistically significant positive correlation was found between TC and TSH, LDLc and TSH and TAG and TSH in patient of primary hypothyroidism. The findings of this study are in consistent with results of

Gomo and Ascott (1994)[6] who also observed positive correlation between TC and TSH. In 1988, Althaus et al[7] observed positive correlation between TAG and TSH. Caraccio et al (2002)[8] observed positive correlation LDLc and TSH.

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