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Research Article

**THYROID DISTURBANCES IN METABOLIC SYNDROME AT  
TERTIARY CARE HOSPITAL**<sup>1</sup> Dr. Abdul Rahim Memon, <sup>2</sup> Dr. Imran Karim, <sup>3</sup> Mukhtiar Ahmed Abro,<sup>4</sup> Dr. Ali Raza Shaikh, <sup>5</sup> Muhammad Jan Khetran and <sup>\*6</sup> Dr. Samar Raza<sup>1, 4, 5, 6</sup> Liaquat University Hospital Hyderabad / Jamshoro<sup>2</sup> Liaquat University of Medical and Health Sciences – LUMHS Jamshoro<sup>3</sup> Peoples University of Medical and Health Sciences for Women**Abstract:****Objective:** To determine the thyroid disturbances in metabolic syndrome at tertiary care hospital.**Patients and Methods:** The six month cross sectional study explored the patients who were diagnosed as metabolic syndrome and fulfill inclusion criteria (age  $\geq 18$  years, either gender who fulfilled the criteria for metabolic syndrome by IDF were taken into study) were recruited for study. The detailed history and clinical examination was performed while along the baseline investigations the specific investigation includes fasting blood sugar, fasting lipid and thyroid profile (TSH, FT4 and FT3). The disturbances were classified as euthyroidism, sub clinical hypo / hyperthyroidism, hypothyroidism and hyperthyroidism. The frequency / percentages (%) and means  $\pm$ SD computed for study variables.**Results:** During six months study period total fifty patients of metabolic syndrome were explored for thyroid profile. The frequency for male and female population was 30 (60%) and 20 (40%) with mean  $\pm$  SD for age of male and female individuals was  $42.86 \pm 6.53$  and  $44.41 \pm 7.62$  respectively whereas the mean  $\pm$  SD for systolic and diastolic blood pressure, fasting blood sugar, waist circumference, high density lipoprotein and triglycerides was  $160.55 \pm 10.85$  and  $100.74 \pm 5.93$ ,  $172.82 \pm 10.42$ ,  $98.92 \pm 7.72$ ,  $32.86 \pm 7.95$  and  $243.43 \pm 10.51$  respectively. Regarding gender distribution male 23 (46%) and female 27 (54%) while the thyroid dysfunction euthyroid 32 (64%), hypothyroid 05 (10%), subclinical hypothyroidism 10 (20%), subclinical hyperthyroidism 02 (4.0%) and hyperthyroidism 01 (2.0%).**Conclusion:** Thyroid dysfunction is common and more prevalent in metabolic syndrome.**Keywords:** Thyroid, Euthyroid, Hypothyroid and Hyperthyroidism**Corresponding author:****\*Dr. Samar Raza,**Email: [zulfikar229@hotmail.com](mailto:zulfikar229@hotmail.com)

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**INTRODUCTION:**

The metabolic syndrome is the cluster of abnormalities as obesity, hypertension, raised triglyceride levels, low excessive density lipoproteins and raised fasting glucose levels [1]. People with metabolic syndrome are at high risk for creating cardiovascular ailment and cerebrovascular diseases in contrast with population except metabolic syndrome. Insulin resistance is supposed to be the pathophysiological phenomenon [2]. The thyroid dysfunction is related with atherosclerotic cardiovascular disorder and affiliation might also be defined by way of thyroid hormones rules of lipid metabolism and its effects on blood pressure [3]. The thyroid hormone seems to serve as a typical pacemaker accelerating metabolic system and may additionally be associated with metabolic syndrome [4]. Both metabolic syndrome and thyroid dysfunction are related with expanded risk of atherosclerotic coronary heart disease. Little is known about the relationship between metabolic syndrome and thyroid dysfunction [5, 6]. Only a few small studies have been performed, in a cross sectional find out about it used to be discovered that subclinical hypothyroidism used to be widespread in 16.4 percent of metabolic syndrome patients [7]. In a study from Nepal, Chandra L et al determined that metabolic syndrome was time-honored in 21.1% of thyroid dysfunction patients [8]. The study executed through Lin St et al located that lower free thyroxin level are related with metabolic syndrome in Chinese population [9]. There is no local statistics accessible in literature related to this association among these two disorders in our population. Therefore, the affiliation of thyroid dysfunction with metabolic syndrome needs to be explored at tertiary care hospital.

**PATIENTS AND METHODS:**

The six month cross sectional study explored the patients who were diagnosed as metabolic syndrome and fulfill inclusion criteria (age  $\geq 18$  years, either gender who fulfilled the criteria for metabolic syndrome by IDF were taken into study) were recruited for study. The exclusion criteria were patient had known thyroid disorder and already on steroids or thyroxine or anti thyroid medications and who are not interested to participate in the study. The detailed history and clinical examination was performed while along the baseline investigations the specific investigation includes fasting blood sugar, fasting lipid and thyroid profile (TSH, FT4 and FT3). The disturbances were classified as euthyroidism, sub clinical hypo / hyperthyroidism, hypothyroidism and hyperthyroidism. The data was collected on proforma while analyzed in SPSS to manipulate the frequencies, percentages and mean  $\pm$  SD for categorical and numerical variables.

**RESULTS:**

During six months study period total fifty patients of metabolic syndrome were explored for thyroid profile. The frequency for male and female population was 30 (60%) and 20 (40%) with mean  $\pm$  SD for age of male and female individuals was  $42.86 \pm 6.53$  and  $44.41 \pm 7.62$  respectively whereas the mean  $\pm$  SD for systolic and diastolic blood pressure, fasting blood sugar, waist circumference, high density lipoprotein and triglycerides was  $160.55 \pm 10.85$  and  $100.74 \pm 5.93$ ,  $172.82 \pm 10.42$ ,  $98.92 \pm 7.72$ ,  $32.86 \pm 7.95$  and  $243.43 \pm 10.51$  respectively. The demographical and clinical profile of study population is presented in Table 1.

**TABLE 1: THE DEMOGRAPHICAL AND CLINICAL PROFILE OF STUDY POPULATION**

Parameter	Frequency (N=50)	Percentage (%)
<b>AGE (yrs)</b>		
30-39	11	22
40-49	25	50
50+	14	28
<b>GENDER</b>		
Male	23	46
Female	27	54
<b>Thyroid dysfunction</b>		
Euthyroid	32	64
Hypothyroid	05	10
Subclinical Hypothyroidism	10	20
Subclinical Hyperthyroidism	02	4.0
Hyperthyroidism	01	2.0

**DISCUSSION:**

The metabolic syndrome is a cluster of metabolic abnormalities wherein peoples are overweight and have hypertension, high triglyceride level, low high density lipoprotein cholesterol and abnormal fasting glucose levels. People with metabolic syndrome are at excessive hazard for growing cardiovascular sickness and type II diabetes [10]. Hypothyroidism is related with lipid abnormalities like excessive triglycerides and low high density lipoproteins, weight gain, glucose intolerance and hypertension, thus hypothyroidism mimics the parameters of metabolic syndrome [11]. In the present study, the majority of patients was in (40-49 year) age group with female predominance 54% and is consistent with the study by Ghanshyam, et al [12]. Regarding the thyroid dysfunction findings of present study euthyroid 32 (64%), hypothyroid 05 (10%), subclinical hypothyroidism 10 (20%), subclinical hyperthyroidism 02 (4.0%), hyperthyroidism 01 (2.0%) the observations are consistent with study by Uzunulu et al [7] and Iwen KA [13]. In this study 10% population of metabolic syndrome patients has hypothyroidism. It is well known and proven that by treating with levothyroxine replacement in all overt or clinical hypothyroid patients, we can reduce all the metabolic parameters and cardiovascular risk and there is some controversy in treating sub clinical hypothyroidism patients [14]. As the metabolic syndrome patients have hyperlipidemia, diabetes, hypertension and increased cardiovascular risk it look justified to manage metabolic syndrome population having sub clinical hypothyroidism by levothyroxine [15]. This finding indicates a need for investigating the presence of thyroid dysfunction in metabolic syndrome population. As shown in previous evidences, managing these hypothyroid in patients with metabolic syndrome are rewarding by improvement in the metabolic parameters and reducing cardiovascular risk.

**CONCLUSION:**

The thyroid dysfunction is common in metabolic syndrome patients and it occurred in patterns as euthyroid (64%), hypothyroid (10%), subclinical hypothyroidism (20%), subclinical hyperthyroidism (4.0%) and hyperthyroidism (2.0%).

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