

FREQUENCY OF UNDIAGNOSED HYPOTHYROIDISM IN OBESE FEMALES

Amer Rauf, Shakeel Ahmed Mirza*, Khurshid Ahmed Utra**

Combined Military Hospital Multan, *Combined Military Hospital Malir Karachi, **Military Hospital Rawalpindi

ABSTRACT

Objective: To determine the frequency of undiagnosed hypothyroidism in obese females.

Study Design: Cross sectional.

Place and Duration of Study: Department of General Medicine, Combined Military Hospital, Multan (a tertiary care hospital). Six months.

Subjects and Methods: All individuals fulfilling the inclusion criteria were enrolled in the study after their consent. Based upon their height and weight, the body mass index was calculated and their blood drawn for thyroid profile.

Results: Total 133 participants were included in the study and all were females, and their mean age (\pm SD) was 47.68 ± 11.382 years. The overall frequency of undiagnosed hypothyroidism was 4.5% (6 out of the 133 subjects)

Conclusion: The determined frequency of undiagnosed hypothyroidism in obese females is not high enough to recommend mass screening in all obese females.

Keywords: Hypothyroidism, Obesity, Mass screening, Thyroid stimulating hormone.

INTRODUCTION

Hypothyroidism is one of the most common and treatable endocrine disease which is characterized by abnormally low levels of thyroid hormones¹. The overall prevalence of Congenital Hypothyroidism (CH) is 1 per 4000 whereas that of acquired hypothyroidism is 1:500-1000². Studies in Pakistan to find the incidence have been few and on a smaller scale which predict a much higher incidence of 1:1000². One male suffers from hypothyroidism in contrast to 5-10 females³. Hypothyroidism is more prevalent in obese than the lean population⁴. In the recent times there has been a lot of interest in the relationship between hypothyroidism and obesity, however local data in this regard is limited. The only study in subcontinent which was conducted in India concluded that the frequency of overt hypothyroidism and subclinical hypothyroidism in obese population was 33% and 11% respectively⁴.

Hypothyroidism affects all major body systems and is associated with significant morbidity and mortality. Studies have shown

that there is no increase in all cause mortality in treated patients of hypothyroidism compared to general population⁵. This fact highlights the importance of early identification and treatment of hypothyroidism. Groups such as the American Academy of Family Physicians (AAFP) and the American Association of Clinical Endocrinologists (AACE) recommend periodic assessment of thyroid function in older women⁶. The purpose of the study is to determine the frequency of undiagnosed hypothyroidism in obese females.

MATERIALS AND METHODS

This cross sectional study was conducted at Combined Military Hospital Multan from March 2012 to August 2012. All the selected patients had body mass index of more than 30 kg/m², were females, aged more than 20 years and less than 65 years. Patients which were already diagnosed hypothyroidism, on anti thyroid iodine or medication were excluded. Pregnant obese females or with ongoing critical illnesses such as ischemic heart disease, chronic renal failure and cirrhosis liver, suffering from other autoimmune diseases were also excluded.

A total of 133 patients were enrolled in the study using non probability consecutive

Correspondence: Dr Amer Rauf, 3- Canal Colony Near Lalazar Park, Thoker Niaz Beg, Lahore
Email: aamerauf@hotmail.com

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sampling. All data were entered and analyzed in SPSS version 20. Mean and SD were calculated for quantitative. Frequencies and percentages were calculated for qualitative data.

RESULTS

The study included total 199 patients. The age of the study population ranged from 22 to 65 years. Average age was 47.68 ± 11.382 years. The weight of the study population ranged from 65 to 94 kilograms. Average weight was 80.17 ± 8.004 kilograms. The body mass index of the study population ranged from 30 to 37 kg/m². Average body mass index was 32.46 ± 2.110 kg/m². The thyroid stimulating hormone level of the study population ranged from 2.45 m IU/L to 21 m IU/L. Average thyroid stimulating hormone level was 4.1447 ± 3.08909 m IU/L. Out of the 133 patients in study population 127 (95.5%) did not have any hypothyroidism. Two patients (1.5%) had subclinical hypothyroidism and four patients (3%) had hypothyroidism. The cumulative frequency of undiagnosed hypothyroidism was 4.5%.

DISCUSSION

Various studies have been conducted to determine the frequency and prevalence of hypothyroidism in obese population but the frequency of undiagnosed hypothyroidism in obese population has not been studied in detail. Local data in this regard is also limited. The study was performed using a strict inclusion and exclusion criteria so as to enroll only those obese females who could not have thyroid illness due to any other cause.

Given the "cause and effect" relationship between hypothyroidism and obesity, various studies have aimed to determine the prevalence of hypothyroidism in obese and vice versa. Unnikrishnan et al⁷ reported frequency of overt hypothyroidism in India to be 3.5%. Verma et al⁴ studied the relationship between obesity and hypothyroidism. They concluded that among obese patients frequency of overt hypothyroidism was 33% and that of subclinical hypothyroidism was 11%. The study however did not specifically determine the frequency of undiagnosed

hypothyroidism. A study was conducted in USA on healthy population in order to determine the prevalence of thyroid disease. The frequency of undiagnosed hypothyroidism was found to be 4.6%⁸. This study however, was performed on general population and included both males and females. Our study targeted the obese female population but the frequency was not much different from that of the American study.

We agree with the international recommendations that only those obese females who present with some signs and symptoms of hypothyroidism should be screened for this disease. It is however recommended to maintain a high index of suspicion for hypothyroidism in morbidly obese females independent of their age.

The study had some limitations. The patients were selected from hospital setting where they had reported for some other illness. Better results can be expected from a general population based study. A strict inclusion and exclusion criteria was adopted but given the low literacy rate and socio economic status of most of our patients, it is possible that some females already had hypothyroidism who never sought medical help for that.

CONCLUSION

Our study concludes that the frequency of undiagnosed hypothyroidism in obese females is not high enough to recommend routine screening for hypothyroidism in all obese females.

Conflict of Interest

This study has no conflict of interest to declare by any author.

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