Hypothyroidism Screening in Menopausal Women - A Cross-sectional study at a teaching District Headquarter Hospital in Punjab, Pakistan

HASSAN NAWAZ DOGAR1, MUHAMMAD HARIS GHANI2, HASIBA ILYAS3

ABSTRACT

Aim: To determine the frequency of hypothyroidism among menopausal women.

Methods: In this descriptive cross-sectional study women aged 40 - 55 years with signs and symptoms of menopause like hot flushes, depression, weight gain, sleeping problems, mood swings and cold intolerance were included. Females having any gynaecological pathology, on hormonal replacement therapy (HRT), with any bleeding disorder or history of using antiplatelet medication and with previous thyroid disorder were excluded from the study. Patient’s complete history and demographics were recorded. 2 ml of venous blood was collected from anterior cubital vein after an overnight fast under aseptic conditions from each individual with her consent. Serum was analysed via chemiluminescence immunoassay for TSH, T4 and T3 levels.

Results: Out of total 100 females, hypothyroidism was found in 20(20%) women. Mean age of females was 49.78±4.65 years. The mean TSH, T3 & T4 of all the females was 3.26±2.91mIU/L, 2.13±0.64nmol/L and 98.31±30.49nmol/L respectively.

Conclusion: Hypothyroidism is quite common amongst Pakistani perimenopausal women. There is a need to develop proper guidelines for routine screening of menopausal females for hypothyroidism as it is a potentially treatable condition with the help of thyroid hormone replacement therapy.

Keywords: Menopause, Subclinical hypothyroidism, Overt hypothyroidism

INTRODUCTION

Menopause is a routine physiological phase that every female has to undergo once in her lifetime.1 It marks the end of a woman’s reproductive period. The mean age of menopause is 51±5 years.2 Menopause is characterized by typical set of menopausal symptoms such as hot flashes, mood swings, depression, anxiety, dry skin and lethargy which can be partly explained by the relative lack of estrogen during this phase.3 What is important to understand is the fact that many of these symptoms are also present in hypothyroidism. Also, it has been noted that these symptoms are more severe in hypothyroid patients.4 This implies that hypothyroidism in this age group could remain undetected as many of the symptoms of hypothyroidism overlap those of menopause.5 Hypothyroidism, if not detected timely and managed accordingly, could lead to accelerated atherosclerosis, hyperlipidemia and heart disease.6 Therefore it is important to be able to screen perimenopausal women for hypothyroidism in order to decrease the associated morbidity.

Hypothyroidism is characterized by a lack of thyroid hormone. It is mostly caused by inflammation. However lack of TRH or TSH can also lead to hypothyroidism. Clinically, two main types exist: 1. Subclinical hypothyroidism characterized by elevated TSH levels and normal free T4 levels; 2. Overt hypothyroidism characterized by elevated TSH levels and reduced free T4 levels. Women are more liable to develop hypothyroidism than males with peak incidence being in the menopausal age group. 7 To date, only a few local studies have been done evaluating the incidence of hypothyroidism among menopausal women. A recent study by Sheikh et al8 reported an incidence of 17% among menopausal women. Another study by Rajesh et al9 found that 21.3% of the females were having subclinical hypothyroidism. Keeping in view the similar symptomatology of menopause and the fact that there are no guidelines in place for screening of menopausal women, we decided to conduct this study with the main aim of determining the frequency of hypothyroidism among menopausal women.

MATERIAL AND METHODS

This descriptive cross-sectional study was carried out in the Department of Medicine, DHQ Hospital Sheikhupura from June 2017 to December 2017. The sample size was calculated using Open Epi...
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A calculator was used with the statistical assumptions of 8% alpha error and 95% confidence interval taking frequency of hypothyroidism among menopausal women to be 17% and comes out to be at least 85 patients for this study. Women aged 40 - 55 years with signs and symptoms of menopause like hot flushes, depression, weight gain, sleeping problems, mood swings and cold intolerance were included in this study. Females having any gynaecological pathology, on hormonal replacement therapy (HRT), with any bleeding disorder or history of using antiplatelet medication and with previous thyroid disorder were excluded from the study. Ethical approval was taken from institutional review board. Non probability consecutive sampling was used to enroll patients meeting inclusion and exclusion criteria. Patient's complete history and demographics were recorded. 2 ml of venous blood was collected from anterior cubital vein after an overnight fast under aseptic conditions from each individual with her consent. Serum was analysed via chemiluminescence immunoassay for TSH, T4 and T3 levels. Subclinical hypothyroidism was defined as serum TSH > 5.5mu/ml and serum free T3 and T4 within normal limits. Overt hypothyroidism was diagnosed on the basis of decreased free T4 levels and increased TSH.

All the data was recorded on a pre-designed proforma and analyzed by SPSS version 21.0. Mean and standard deviation was calculated for all quantitative variables like age, serum TSH, T4 and T3 levels. Frequency and percentage was calculated for all qualitative variables like sign and symptoms e.g. fatigue, weight gain, cold intolerance, muscle cramps, sleeping problems, depression, hypothyroidism and type of hypothyroidism. p-value < 0.05 was taken as significant.

RESULTS
A total of 100 females were enrolled in the study after they met the inclusion and exclusion criteria. 28(28%) females were of age range 45-50 years, 48(48%) were of age 51-55 years and Mean age of females was 49.78±4.65 years. 24(24%) were of age range 56-60 years. The mean height of females was 1.62±0.37 meters with a range of 1.50-1.75 meters. The mean weight of females was 69.23±7.86kg with a range of 55-87kg. The mean BMI of females was 25.97±4.21 with a range of 18.76-34.76 (Table 1).

A total of 20(20%) females were found to have hypothyroidism. Four women had overt hypothyroidism (TSH high, free T4 low) and 16 had subclinical hypothyroidism (TSH HIGH, free T4 normal). The mean TSH, T3 & T4 of all the females was 3.26±2.91mIU/L, 2.13±0.64nmol/L and 98.31±30.49nmol/L respectively. Among hypothyroidism cases, the mean TSH, T3 and T4 was 8.98±1.37, 3.23±0.67 and 153.2±20.38 while among 80(80%) euthyroid females (no hypothyroidism), the mean TSH was 2.37±1.31, T3 was 2.04±0.69 and T4 was 85.13±16.89. Depression, weight gain and cold intolerance are more frequently seen in menopausal women with hypothyroidism (p-value >0.05) whereas euthyroid females are more likely to have fatigue and muscle cramps (p-value <0.05) (Table 2).

DISCUSSION
Hypothyroidism is one of the commonest endocrine disorders. It is increasingly seen in females especially belonging to the menopausal age group. Sign and symptoms of menopause are quite similar to those of hypothyroidism and hence can confuse its diagnosis in menopausal women. Hence it is essential to screen perimenopausal females for hypothyroidism as uncontrolled hypothyroidism is associated with increased morbidity. So we decided to conduct this study.

Table 1: Patient’s demographics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean age ± SD</th>
<th>49.78 + 4.65 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-45 years</td>
<td>28(28%)</td>
<td></td>
</tr>
<tr>
<td>46-50 years</td>
<td>48(48%)</td>
<td></td>
</tr>
<tr>
<td>51-55 years</td>
<td>24(24%)</td>
<td></td>
</tr>
<tr>
<td>Mean weight ± SD</td>
<td>69.23 ± 7.86 kg</td>
<td></td>
</tr>
<tr>
<td>Mean height ± SD</td>
<td>1.62 ± 0.37 meters</td>
<td></td>
</tr>
<tr>
<td>Mean BMI ± SD</td>
<td>25.97 ± 4.21</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Frequency</th>
<th>Hypothyroidism (present) mean±SD</th>
<th>Hypothyroidism (absent) mean±SD</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>80 (80%)</td>
<td>11 (55%)</td>
<td>69 (86.3%)</td>
<td>0.002*</td>
</tr>
<tr>
<td>Muscle cramps</td>
<td>65 (65%)</td>
<td>7 (35%)</td>
<td>58 (72.5%)</td>
<td>0.002*</td>
</tr>
<tr>
<td>Depression</td>
<td>40 (40%)</td>
<td>18 (90%)</td>
<td>22 (27.5%)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Weight gain</td>
<td>27 (27%)</td>
<td>16 (80%)</td>
<td>11 (13.8%)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Cold intolerance</td>
<td>28 (28%)</td>
<td>15 (75%)</td>
<td>13 (16.25%)</td>
<td>0.000*</td>
</tr>
<tr>
<td>Sleeping problems</td>
<td>8 (8%)</td>
<td>2 (10%)</td>
<td>6 (7.5%)</td>
<td>0.712*</td>
</tr>
</tbody>
</table>
Our study reported an incidence of 20% among menopausal women. This was consistent with the findings of Sheikh et al\(^8\) and Rajesh et al\(^9\) who reported an incidence of 17% and 21.3% respectively. Hollowell et al\(^10\) reported a slightly higher incidence of approximately 26% whereas Joshi et al\(^5\) reported a relatively much lower incidence of about 12.5%. Our high incidence rate could be partly explained by the poor nutritional status and lack of proper screening programmes for this ailment.

We found out that 4(20%) females had overt hypothyroidism while majority of the females (80%) had subclinical hypothyroidism. This pattern was consistent with the findings of Joshi et al\(^5\). Majority of the females (48%) belonged to the 46-50 years old age bracket as reported earlier by Sheikh et al\(^8\). Our study also showed that depression, weight gain and cold intolerance was significantly more prevalent in those with hypothyroidism. Similar trend was noted by Sheikh et al\(^8\).

There were certain limitations to our study with perhaps the most important being the small sample size. Secondly, we did not perform subgroup analysis for hypothyroidism which could have provided a much deeper insight into the actual picture. Lastly, using menopausal rating scale (MRS) as in Joshi et al’s study\(^5\) would have added more objectivity to the inclusion criteria rather than relying solely on the subjective experience of females for the diagnosis of menopause.

**CONCLUSION**

Prevalence of hypothyroidism is quite high amongst Pakistani perimenopausal women. There is a need to develop proper guidelines for routine screening of menopausal females for hypothyroidism as it is a potentially curable disease with the help of thyroid hormone replacement therapy.

**REFERENCES**