Can thyroid dysfunction explicate severe menopausal symptoms?

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Summary
Many of the menopausal manifestations look like those accredited to thyroid hyperfunction or hypofunction. Can thyroid dysfunction explicate severe menopausal symptoms? The study comprised 350 women with different menopausal symptoms. All women had serum TSH, T3 and free T4 estimated. Women with thyroid dysfunction were appropriately treated and other women were treated with ERT. The study showed that 21 women (6%) had hypothyroidism and 18 (5.1%) had hyperthyroidism. Marked improvement in the menopausal-like symptoms occurred after treatment of the thyroid dysfunction. Elderly women with severe or resistant menopausal symptoms can be offered TSH, T3 and T4 assays to rule out the thyroid disturbances before attempting hormone replacement therapy.

Keywords
Hypothyroidism, hyperthyroidism, menopause

Introduction
The conviction that many of the female somatic and behavioural disturbances are related to the lifetime reproductive changes is an ancient belief that persists to the contemporary times. Menopause, as a foremost endocrinial event in the female life, is responsible for many of these physical and mental turbulences.

Thyroid is one of the major endocrinal glands that affect all body function. Studies investigating the thyroid function in menopausal women failed to demonstrate notable age-related changes. It has been recognised that serum T3 remains normal through the physiologic homeostatic mechanisms of the body. Although the production of T4 decreases by 25% with age, its metabolic clearance is reduced. The rate of conversion of T4 to T3 declines and serum thyroid stimulating hormone (TSH) slightly increases. Plasma thyroid-binding globulins remain unchanged in healthy individuals with the progression of age (Vanderpump and Tunbridge 2002; Morganti et al. 2005; Lee et al. 2006). However, thyroid dysfunctions are not uncommon during menopausal time (Schindler 2003). Many of the menopausal manifestations; namely hot flashes, mood swings and gastrointestinal and cardiovascular changes, bear a resemblance to those attributed to thyroid hyper-function or even hypo-function. This study aims at probing the role played by the thyroid disturbances in the menopausal symptoms and the effect of treating thyroid dysfunctions on relief of these symptoms.

Materials and methods
The study comprised 350 women who presented with different menopausal symptoms among those attending the outpatient clinic of the Department of Obstetrics and Gynaecology and the Endocrinology Unit in Mansoura University Hospitals, Egypt. Menopause was diagnosed by cessation of previously regular menstruation for at least 1 year and serum FSH above 40 mIU/ml. All women with medical problems that might be contributing to the presenting symptoms were excluded from the study. All women with current or previous treatment of thyroid problems were also excluded from the study. The study was approved by the local ethical committee and informed consent was given by the patient before being recruited.

All women had detailed history taking, physical examination and trans-vaginal ultrasound examination for measuring the endometrial thickness. All women had serum-free thyroxin (normally 10 – 35 pmol/l), total T4 (normally 51 – 154 nmol/l), T3 (normally 1.2 – 3 nmol/l) and TSH (normally 0.5 – 5 mU/l) measured. Women with hypothyroidism (serum TSH >10 mU/l) were further investigated with thyroglobulin antibodies assay (normally 0 – 60 ng/l), while women with hyperthyroidism (serum TSH <0.1 mU/l and T4 >200 nmol/l) had radioactive iodine uptake test, thyroid ultrasound and fine-needle aspiration biopsy to clarify the aetiology of thyroid disease and then to follow the progress of treatment.

Patients with documented hyperthyroidism were treated with anti-thyroid drugs or surgery but none were treated with radioactive iodine, while patients with hypothyroidism were treated with thyroxin replacement. Women with normal thyroid function had oestrogen replacement therapy when appropriate.

Data obtained were statistically analysed using the SPSS computer package (SPSS Inc., Zonguldak Karaelmas University, Zonguldak, Turkey) by the χ2 test. Results were expressed as mean and standard error of the mean. The differences were considered to be statistically significant if p < 0.05.

Results
Table I shows the patients’ characteristics. Women had different durations since menopause. Hot flashes were the most common presenting symptom in the study group.
(n = 260) followed by cognitive and mood changes and neurological manifestations as paraesthesia and muscle cramps (n = 163). A total of 21 women (6%) had hypothyroidism (all were due to autoimmune thyroiditis), while 18 women (5.1%) had hyperthyroidism (11 were due to toxic multi-nodular goitre and seven had Graves’ disease) (Figure 1). Table II, for the thyroid function in relation to the menopausal symptoms, shows that most women had normal thyroid function. Urinary symptoms were significantly more in the hypothyroid than hyperthyroid group while the hot flashes were more in the hyperthyroid group.

Most of the patients in the thyroid dysfunction group reported marked improvement of the frequency and intensity of the hot flashes, general cognitive functions and mood changes and their urinary symptoms after treatment of either thyroid hypo-function or hyper-function. Only three patients (two in hypothyroid and one in hyperthyroid group) reported improvement in their sexual life.

**Discussion**

Thyroid dysfunction is not uncommon in elderly women. Menopause, hypothyroidism and hyperthyroidism share many of their presenting symptoms such as hot flashes, cognitive and mood changes, gastrointestinal and genitourinary symptoms. Should the thyroid function be tested in menopausal women suffering from severe or resistant menopausal symptoms was the question the study tried to answer. All women included in the study suffered severe menopausal symptoms because, in a community like Egypt, seeking advice for menopausal symptoms is not common practice unless the presenting symptoms are rigorous.

In this study, 21 women (6%) had hypothyroidism and all were due to autoimmune thyroiditis. In one study, the prevalence of definite hypothyroidism was 5.9% in women and another 5.9% had borderline elevation of TSH (5–10 μU/ml). 12.7% of these had low serum T₄ (Sawin et al. 1985; Samuels 1998; Eaton et al. 2003). Other prevalence studies reported rates of hypothyroidism in different elderly populations ranging from 0.5–17.5% (Vanderpump and Tunbridge 2002). These wide variations were mostly due to using different selection criteria for the study populations and different diagnostic criteria for thyroid dysfunction, rendering direct comparisons difficult.

The most common causes of hypothyroidism in the elderly are autoimmune thyroiditis or previous treatment for Graves’ disease (Sawin et al. 1985). Only 10–20% of patients with laboratory-determined hypothyroidism are recognised on clinical examination (Sawin et al. 1983, 1985, 1991). Complaints of elderly hypothyroid patients are usually subtle and difficult to distinguish from symptoms associated with ageing and menopause. Cognitive and mood changes were the most common presentations in the study. However, in other reports, fatigue and weakness were the two most common complaints in elderly women above 70 years with documented hypothyroidism, while mental slowness, drowsiness, chilliness, dry skin, constipation and deafness were found in less than half of the subjects. In comparison, in a group of younger (<55 years old) hypothyroid patients, chilliness, paresthesias, weight gain or muscle cramps were significantly less (Lloyd and Goldberg 1961; Bahemuka and Hodkinson 1975; Levy 1991).

In this study, 18 women (5.1%) had low TSH and high T₄ levels and most presented with hot flashes. It was reported that the prevalence of hyperthyroidism in elderly women ranges from 0.5–2.3%, depending on the criteria for diagnosis and the population studied (Vanderpump and Tunbridge 2002; Schindler 2003; Morganti et al. 2005; Lee et al. 2006). Symptoms of hyperthyroidism, like those of hypothyroidism, can be subtle and difficult to detect in the elderly such as depression, change in bowel habits, chronic fatigue, emotional liability and muscle weakness and wasting. The classic symptoms of thyrotoxicosis are seen in only one-third of patients aged more than 70 years (Doucet et al. 1994; Trivalle et al. 1996). The most common signs are tachycardia, fine skin, tremors, atrial fibrillation and hyperactive reflexes. Toxic multi-nodular goitre is the most common cause of hyperthyroidism in the elderly and the incidence of Graves’ disease declines after 60 years of age (Iverson 1953). Iodine-induced

![Figure 1. Thyroid function in menopausal women.](image-url)
hyperthyroidism (iodbasedow phenomenon) is seen in patients with non-toxic multi-nodular goitre after the excessive intake of iodine or iodine-containing substances (Levin 1987; Lahey 1991).

High-sensitivity TSH assays have simplified the diagnosis of thyrotoxicosis. A suppressed TSH level in association with elevated T₃ or T₄ is generally diagnostic of hyperthyroidism. However, an isolated low TSH level in an elderly person does not have a high predictive value for hyperthyroidism. Decreased serum cholesterol, elevated alkaline phosphatase and mildly increased serum calcium are occasionally found in thyrotoxicosis (Iverson 1953; Leger et al. 1984; Levin 1987; Lahey 1991).

Women with proven thyroid dysfunction were treated properly and this led to relief of most of their complaints apart from sexual dysfunction. Although their complaints did not disappear completely as they are partly due to oestrogen deficiency, most women were not in need of any oestrogen replacement in conjunction with the thyroid therapy. Oestrogen replacement therapy (ERT) is not without complication and, although this is a very controversial issue, women in this community will prefer to have their symptoms relieved without resorting to ERT. As expected, ERT and other non-specific treatments happened to be ineffective until the thyroid disturbances were properly corrected. However, it is accepted as true that there should be a more accurate method for evaluating the effect of therapy on the patients’ symptoms than just answering questions.

The study concluded that elderly women with severe or resistant menopausal symptoms can be offered TSH, T₃ and T₄ assays to rule out the thyroid disturbances before attempting hormone replacement therapy.

References


