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# STUDY OF THYROID FUNCTION IN PREDICTING ARTERIAL HYPERTENSION IN PERIMENOPAUSAL WOMEN

**Abstract:** Heart disease in women increases significantly perimenopause. Estrogen is believed to have a protective effect on the heart and blood vessels. Its decline during menopause can lead to a variety of changes that increase the risk of developing cardiovascular disease. These include changes in the walls of the blood vessels, making them less elastic, and changes in the lipid profile, such as increases in LDL, the bad cholesterol, and decreases in HDL, the good cholesterol. Arterial hypertension is one of the health problems characterized by high prevalence and high mortality rate. Aging in both men and women is characterized by increases in blood pressure, and the prevalence of hypertension in menopausal women is higher than it is in men, with 41% of menopausal women becoming hypertensive [1]. It has a serious negative effect on the health of women during menopause. Many negative changes, which are thyroid gland dysfunction, decreased insulin resistance, metabolic disorders, occur in the female body due to the decrease in estrogen during menopause. And the changes are the leading cause of cardiovascular disease. The high frequency of arterial hypertension in the female population after perimenopause is due to dyshormonal changes. This review describes possible mechanism of influence of thyroid gland dysfunction on the occurrence of arterial hypertension during perimenopause.

**Keyworlds** Menopause; hypertension; women; thyroid dysfunction, estrogen, blood pressure; cardiovascular diseases.

## Introduction

The thyroid is located in your neck in front of your windpipe, below your Adam's apple, and is part of your endocrine system. It's a vital hormone gland, so it's not surprising that perimenopause and menopause – with their accompanying hormonal disruptions – can cause thyroid issues. Your thyroid gland has two main functions: firstly, to control metabolism, or the rate at which the cells in your body work; and secondly, to control growth in early life. It also helps to regulate various body functions by releasing thyroid hormones into your bloodstream, helping absorption of vitamins and regulating vitamin D processing. Several different hormones are produced by your thyroid. The main ones are tri-iodothyronine (T3), an active hormone that regulates your body's metabolism, and thyroxine (T4), an inactive hormone that becomes active once it is converted to T3. T4 is converted by enzymes, mostly in your liver, into T3. Your thyroid also produces very small amounts of T1 and T2, although little is known about their roles, and calcitonin, which is involved in calcium and bone metabolism. Thyroid conditions include Hashimoto's, Grave's, hypothyroidism, hyperthyroidism, nodular goitre, and cancer all of which occur often in postmenopausal and elderly women [1]. Many symptoms of thyroid diseases – such as anxiety, heart palpitations, sweating, gaining weight and insomnia – can be tricky to diagnose in menopausal women as they are common for both thyroid problems and menopause [1].

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According to the British Thyroid Foundation, it is common for perimenopausal and menopausal women to also have an underactive thyroid. This is because changing oestrogen levels are thought to affect thyroid function [2]. Estrogen can also affect thyroid function in other ways:

Estrogen stimulates the growth of the thyroid gland. As a consequence, excess estrogen can lead to an enlarged thyroid (goiter); inadequate thyroid tissue results from too little estrogen.

Estrogen regulates the protein that binds to the thyroid hormone (TBG) in the bloodstream. Too much can result in inadequate unbound thyroid hormones, which cause symptoms of underactive thyroid. These symptoms of hypothyroidism and menopause can magnify one another.

Estrogen is also responsible for stimulating thyroglobulin, a thyroid hormone precursor. Excess estrogen causes goiter because of high levels of thyroglobulin. Likewise, too little estrogen results in low thyroglobulin, which reduces thyroid function.

Thyroid hormones are involved in regulating your heart rate and maintaining blood vessel health. Low thyroid hormone levels can make you more prone to high blood pressure. When thyroid doesn't make enough hormones, heart rate slows down. Low thyroid hormone levels can also make blood vessels less flexible. When this happens, blood pressure rises as heart works harder to keep blood pumping throughout body.

Hypothyroidism has also been associated with high cholesterol levels. Over time, high cholesterol may cause your blood vessels to become narrow, further increasing blood pressure. (3)

**Materials and methods**

In order to study the affect of thyroid gland dysfunction on arterial hypertension during perimenopause, the amount of TSH was measured in 150 women with arterial hypertension treated at the "Neo Med Cardio" clinic. Patients without serious chronic diseases were selected.

**Results and discussions**

Patients were divided into two groups: the main group (with arterial hypertension) women aged 48±2 years and the control group (without arterial hypertension) women aged 46±3. Arterial pressure was 140/90 mm Hg, and in the control group it was 125/80 mm Hg ($p \leq 0.05$). In 72.8 % of the main group, the TSH level was higher than normal ($\geq 4.12$ mU/L), in 26.4% of the control group, this hormone was higher ($p \leq 0.05$).

**Conclusion**

Thyroid gland dysfunction is of importance in the origin of arterial hypertension in women during perimenopause. Therefore, it is necessary to control the function of the thyroid gland in order to prevent the development of arterial hypertension in women of climactic age.

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