



## EFFECTIVENESS OF SHIRODHARA IN HYPOTHYROIDISM: A NARRATIVE REVIEW

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### ABSTRACT

**Background:-**Thyroid diseases are possibly, among the commonest endocrine disorder worldwide. India too has a significant burden of thyroid diseases. Several studies had been carried out till date emphasizing the role of stress in exacerbation of endocrine, there by thyroid dysfunction. Some studies came up with conclusion revealing stress as the precipitating factor for hypothyroidism. Similarly considerable clinical research showed the efficacy of Shirodhara in the management of stress. One can treat most thyroid conditions with medication, but there's no pill to evict stress. Moreover even with thyroxine replacement therapy patient report with symptoms of tiredness, lack of energy, discrete cognitive disorder, mood disturbances in spite of biochemical euthyroidism. There comes in the role of Shirodhara. Ayurvedic clinicians often observe its anti-stress effect in practice. **Objective:-**To highlight in brief the hormonal changes in stress and its impact on hypothyroidism and put forward the hypothesis that shirodhara, oil pouring on forehead region by specific methodology) has a therapeutic value in hypothyroidism. **Method:-**Review of research related to Hypothyroidism – stress – Shirodhara. **Conclusion:-**Shirodhara has therapeutic role in the management of Hypothyroidism. By means of Abhyanga as a purvakarma of Shirodhara and following it in at least three sessions in the patients of Hypothyroidism would derive better results.

**KEYWORDS:** Shirodhara, Hypothyroidism, stress.

### INTRODUCTION

A large number of patients reporting to the general practitioners with symptoms like dry skin, fatigue, cold sensitivity, constipation, lack of concentration, lack of libido, irregular periods etc often lead to the diagnosis of hypothyroidism, a disease that affects all aspects of physical and emotional wellbeing with no significant lab findings except raised TSH levels.

Thyroid diseases are arguably, among the commonest endocrine disorder worldwide. India too has a significant burden of thyroid diseases. According to a projection from various studies on thyroid disease, it has been estimated that about 42 million people in india suffer from thyroid diseases. Population studies have suggested that, about 16.7% of adult subjects have anti-thyroid peroxidase (TPO) antibodies and about 12.1% have anti-thyroglobulin antibodies. In a landmark study of Hashimoto's thyroiditis in India, 6283 schoolgirls from all over the country were screened. Among fine needle

aspiration cytology- confirmed cases of juvenile autoimmune thyroiditis, subclinical and overt hypothyroidism were seen in 15% and 6.5% respectively.<sup>[1]</sup>

In the modern environment one is exposed to various stressful conditions: impossibly full schedules, driving in traffic, financial problems, arguments with spouse, losing a job and many other emotional and psychological challenges of modern life. Stress can lead to changes in the serum level of many hormones including glucocorticoids, catecholamines, growth hormone and prolactin. Stress can aggravate hypothyroidism, and you can be stressed because of the hypothyroidism symptoms. Stress affects the immune system both directly and indirectly through the activation of neural and endocrine systems.<sup>[2]</sup> 'Stress' may be defined as any situation which tends to disturb the equilibrium between a living organism and its environment.<sup>[2]</sup>

One can treat most thyroid conditions with medication, but unfortunately, there's no pill to banish stress. Moreover even with thyroxine replacement therapy patient report with symptoms of tiredness, lack of energy, discrete cognitive disorder, mood disturbances in spite of biochemical euthyroidism. There comes in the role of Shirodhara. Considerable research has been carried out concluding the role of Shirodhara in stress management. In this review, we will highlight in brief the hormonal changes in stress and its impact on hypothyroidism and put forward the hypothesis that shirodhara, oil pouring on head region by specific methodology) has a therapeutic value in hypothyroidism.

## METHODOLOGY

1. Review of five articles which were clinical trials related to Shirodhara and stress published in peer reviewed journals
2. Review of five articles related to stress and Hypothyroidism published in peer reviewed journals

## DISCUSSION

Most people face the obvious forms of stress that affect the HPA axis. The level of various hormones changes in response to stress. Reactions to stress are associated with enhanced secretion of a number of hormones including glucocorticoids, catecholamines, growth hormone and prolactin, the effect of which is to increase mobilization of energy sources and adapts the individual to its new circumstance.<sup>[2]</sup>

Activation of the pituitary-adrenal axis is a prominent neuroendocrine response to stress, promoting survival. Stimulation of this axis results in hypothalamic secretion of corticotrophin-releasing factor (CRF). CRF then stimulates the pituitary to adrenocorticotropin (ACTH), 8-lipotropin and 3-endorphin. Plasma levels of these hormones can increase two- to fivefold during stress in humans.<sup>[2]</sup>

Countless studies show that chronic adrenal stress depresses hypothalamic pituitary axis. And since these two organs direct thyroid hormone production, anything that disrupts the HPA axis will also suppress thyroid function.<sup>[3]</sup>

In one study by Walter KN et al observed the relationship between TSH levels and cortisol in a preliminary study of young, healthy adults without known thyroid disease or other underlying health conditions. The positive relationship between serum TSH and cortisol levels in a healthy population is a compelling new finding that is consistent with and extends the observation that frankly hypothyroid patients have frankly elevated cortisol levels.<sup>[4]</sup>

Another potential explanation for the positive TSH-cortisol relationship is that hypothyroidism - subclinical or clinical - is associated with subtle metabolic stress.

Metabolic stress could be imposing an effect on the adrenocorticotropin hormone-adrenal axis leading to an increase in stress hormone (i.e., cortisol) release and production.<sup>[4]</sup>

Chronic elevations in serum cortisol and hypothyroidism (including subclinical hypothyroidism) have been separately linked with increased rates of depression, anxiety, and poor cognitive functioning e.g. Thus, the association between TSH levels and cortisol suggests at least the possibility of a novel pathway through which hypothyroidism (both clinical and subclinical) may promote poor mental health; or hypothyroidism and an elevated cortisol level could be synergistic on mental health.<sup>[4]</sup>

Cortisol, the main hormone produced in response to stress, can suppress pituitary function and keep the thyroid-stimulating hormone (TSH) from being released, thereby inducing hypothyroidism, according to Dr. Wasser Cortisol is one of the hormones released by the adrenals during the stress response. Prolonged cortisol elevations, caused by chronic stress, decrease the liver's ability to clear excess estrogens from the blood. Excess estrogen increases level of thyroid binding globulin (TBG), the proteins that thyroid hormone is attached to as it's transported through the body. When thyroid hormone is bound to TBG, it is inactive. It must be cleaved from TBG to become "free-fraction" before it can activate cellular receptors. (These free-fraction thyroid hormones are represented on lab tests as "free T4 [FT4]" and "free T3 [FT3]"). When TBG levels are high, the percentage of free thyroid hormones drops.<sup>[5]</sup>

The GI tract, lungs and the blood-brain barrier are the primary immune barriers in the body. They prevent foreign substances from entering the bloodstream and the brain. Adrenal stress weakens these barriers, weakens the immune system in general, and promotes poor immune system regulation. When these immune barriers are breached large proteins and other antigens are able to pass into the bloodstream or brain. If this happens repeatedly, the immune system gets thrown out of whack and one becomes more prone to autoimmune diseases – such as Hashimoto's. Also, when stressed, you're more vulnerable to autoimmune thyroid conditions (eg, Hashimoto's thyroiditis). A 2004 study in the journal *Thyroid* found that stress is one of the environmental factors for thyroid autoimmunity.<sup>[5]</sup>

*Shirodhara* is a classical, a well-established and widely practicing ayurvedic procedure of slowly and steadily dripping medicated oil or other liquids on the forehead. Ayurvedic clinicians always observe its anti-stress effect.

Kalpana Dhuri et al have given away a stress-relieving effect of Shirodhara as judged by the mean score on V.A.S., EEG changes, and vital signs. It changes in vital signs, EEG, ECG, salivary cortisol, and urinary catecholamines as putative correlates of stress .The

changes in the EEG records confirmed the subjective relaxant effect scored by the V.A.S. for stress relief. For example, the nature of the EEG waves changed more to alfa, and even theta waves. However, the EEG changes, the baseline values of salivary cortisol and urinary catecholamines were not significantly affected by *Shirodhara* in the fractional samples. There is a need to conduct the programme of several sessions of *Shirodhara* in a group of patients with anxiety neurosis to evaluate the effects on salivary cortisol and urinary catecholamines.

They made a note that The Japanese workers have also shown an anti-anxiety effect of *Shirodhara*. In their study, massage (*abhyanga*) had not preceded *Shirodhara*, as done in present study. Usage of *abhyanga* has to be a *purvakarma* of *Shirodhara* as per the classic traditions. The enhancement of the relaxant activity is a consequence of the sequential use of both the procedures.<sup>[6]</sup>

Uebaba et al made known that *Shirodhara* has anxiolytic and ASC-inducing effects, and it promotes a decrease of noradrenaline and exhibits a sympatholytic effect, resulting in the activation of peripheral foot skin circulation and immunopotentiality. The subjects receiving *Shirodhara* treatment showed lowered levels of state anxiety and higher levels of ASC than those in the control position. Plasma noradrenaline and urinary serotonin excretion decreased significantly more after *Shirodhara* treatment than in the control. Plasma levels of thyrotropin-releasing hormone, dopamine, and natural killer (NK) cell activity were different between control and *Shirodhara* treatment.<sup>[7]</sup>

Anil et al observed the significant effect of Dashmool Kwath *Shirodhara* in stress induced chronic insomnia.<sup>[8]</sup> Vaidehi Raole et al shown the efficacy of *Shirodhara* in psychosomatic disorders.<sup>[9]</sup>

Purnima Rao et al publicized efficacy of *Shirodhara* in Chittodvega w. s. r. to generalized anxiety disorder.<sup>[10]</sup>

Earlier, Herbert Benson has shown the effect of meditation in relief of stress through what he calls "Relaxation Response." Wallace has shown the effects of long-term practice of transcendental meditation on systolic blood pressure, oxygen consumption, etc. *Shirodhara*, too, seems to induce the relaxation response without meditation.<sup>[6]</sup>

According to *Acharya Charaka*, the *Shirsha* is the seat of *Prana* and all *Indriyas* (Sense organs) having shelter in *Shirsha*. Marmas are the vital areas in the body. Sthapani, Shankha, Adhipati, Utkshepa etc are the Marmas located in *Shirsha*, get stimulated during *Shirodhara* which may activate the immune system.

The center of the forehead, which was evolution wise related to the third eye, is connected atavistically to the

pineal gland. This spot is known as *Agya Chakra* in the yoga tradition which controls the function of other *Chakras*, and it is also responsible for intellect, knowledge etc. *Shirodhara* may stimulate *Adgnya Chakra* thereby improving the functions of mind which is vitiated in Stress as it is the place of subtle mind.<sup>[9]</sup>

Focusing on *agnya chakra* with closed eyes during meditation leads to psychosomatic harmony. As the oil drips on the *agnya chakra*, it is proposed that the meditation-like effect is a consequence of stillness of mind leading to adaptive response to the basal stress.

## CONCLUSION

Taking in consideration the day to day observations of anti-stress effect of *Shirodhara*, in clinical set up supported by considerable research carried out in the form of clinical trials as well as research concerning positive correlation between stress and Hypothyroidism, it can be hypothesized that *Shirodhara* has therapeutic role in the management of Hypothyroidism.

By means of *Abhyanga* as a *purvakarma* of *Shirodhara* and following it in at least three sessions in the patients of Hypothyroidism would derive better results.

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