

# Study of Thyroid Function in Housewives with Chronic and Relapsing Hand Eczema

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## **Abstract**

Thyroid hormones are playing a critical role in regulating the healthy condition of skin. Thyroid gland abnormality can lead to a diversity of manifestations in skin. We performed thyroid function tests in housewives with chronic and relapsing hand eczema affecting both hands to find prevalence of thyroid dysfunction in them. So far in our knowledge this is the first study in the world evaluating thyroid function tests in housewives with chronic and relapsing hand eczema. Our study showed that out of eighty eight housewives with chronic and relapsing hand eczema twenty one had clinical hypothyroidism (23.9%) and nine had subclinical hypothyroidism (10.2 %). We concluded that there is high prevalence of hypothyroidism in housewives with chronic and relapsing hand eczema involving both hands. The chronic and relapsing hand eczema may be a subtle sign of underlying hypothyroidism, which has to be confirmed by further studies.

**Keywords-** Thyroid, Skin, Hand eczema, Hypothyroidism with hand eczema, Hand eczema.

## **Introduction**

Thyroid hormones are playing a critical role in regulating the healthy condition of skin. The prevalence of hypothyroidism is high, and it affects one in 10 adults.<sup>1</sup> Skin is a potential window to many endocrine diseases.<sup>2</sup> Thyroid gland abnormality can lead to a diversity of manifestations in skin. Many studies have shown that common cutaneous symptoms of hypothyroidism are xerosis, decreased sweating and keratoderma.<sup>3,4,5,6</sup> We usually get history of dryness and chapping of hands in the initial state of most of the cases with chronic and relapsing hand eczema. Female gender is found to have significant association with hypothyroidism.<sup>1,7</sup> So we decided to study the thyroid function tests in housewives with chronic and relapsing hand eczema affecting both hands to find the prevalence of thyroid dysfunction in them. We did this study only on housewives to avoid the confounding element of occupational hand eczema. So far in our knowledge this is the first study in the world evaluating thyroid function tests in housewives with chronic and relapsing hand eczema.

## **Aim -**

To study thyroid function tests in housewives with chronic and relapsing hand eczema.

## **Study population -**

All housewives who attended the dermatology clinic with chronic and relapsing hand eczema involving both hands from January 2015 to January 2016.

## **Inclusion criteria**

Housewives having hand eczema involving both hands, lasting for more than one month and having more than three episodes of hand eczema in a year were considered to have chronic and relapsing hand eczema.

## **Exclusion criteria**

- 1) Housewives with any other co-morbidities including anemia.
- 2) Known cases of any endocrine disorders
- 3) Who are having Atopic diathesis or Psoriasis
- 4) Unilateral involvement
- 5) Super infection with fungal infection
- 6) Pregnancy and lactation

## **Study period - one year**

## **Methodology**

All housewives who attended the dermatology clinic with chronic and relapsing hand eczema involving both hands from January 2015 to January 2016 were subjected to thyroid function tests (at regional lab by using Chemiluminescence, Immunoassay technique). Complete blood count was ordered for all the cases and fungal scrapping with potassium hydroxide mount was performed in all the cases to rule out anemia and any fungal super infection respectively. Thyroid profiles of all the cases were interpreted by endocrinologist. The patients who had

abnormal thyroid profile were further evaluated and treated by endocrinologist.

## Results

Eighty eight cases were fulfilling the inclusion and exclusion criteria; hence they were recruited in the study during the study period. The average age of presentation was thirty five years and one month. Sixty eight percent cases were from rural area and thirty two percent from urban area. Our study showed that twenty one cases had clinical hypothyroidism (23.9%) and nine had subclinical hypothyroidism (10.2%). Out of nine cases of subclinical hypothyroidism, five had positive antithyroid antibodies. All the patients with subclinical hypothyroidism were having age more than 40 years. None of them were having hyperthyroidism.

## Discussion

The prevalence of hypothyroidism is high in India, and it affects one in 10 adults Indian population. One large epidemiological study from India showed that bigger proportion of females than males (15.86% vs. 5.02%;  $P < 0.0001$ ) were found have hypothyroidism.<sup>1</sup> Other studies have shown prevalence of hypothyroidism ranging from 4 percent to 11 percent in Indian women.<sup>7,8,9</sup> The prevalence was high in inland cities than coastal area.<sup>1</sup> Our study revealed high TSH in 34 percent cases and clinical hypothyroidism in 23.9 percent cases which is higher than the prevalence in normal Indian female population as shown by the earlier studies.<sup>1,7,8,9</sup> After meticulous interpretation of our results, we have reached a conclusion that there is high prevalence of hypothyroidism in housewives with chronic and relapsing hand eczema involving both hands, which has to be confirmed by further studies. The chronic and relapsing hand eczema may be a subtle sign of underlying hypothyroidism. The hypothyroidism is probably inciting chronic and relapsing hand eczema by causing xerosis of palms (Palmaris sicca), which in turn lead to disruption of skin barrier, fissuring and recurrent scaly plaques.

## Recommendation

We recommend that hypothyroidism should be ruled out in every housewife who presents with chronic and relapsing hand eczema.

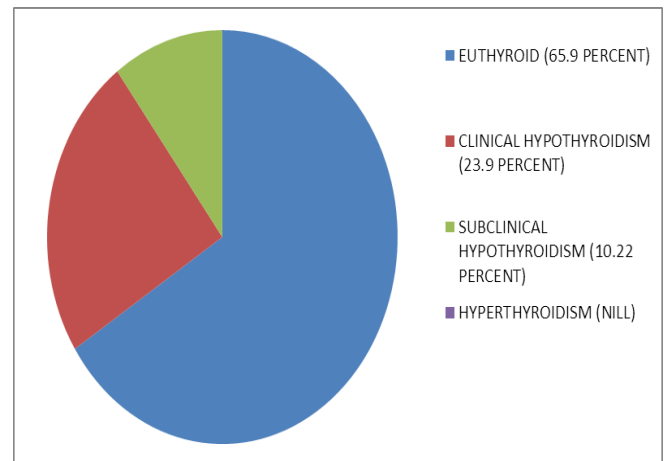


Figure 1 Thyroid profiles of eighty eight housewives with chronic and relapsing hand eczema



Figure 2 Hand eczema with dryness, scaling and chapped appearance



Figure 3 Hand eczema with coin shaped hyperkeratotic plaques, this patient was later found to have severe hypothyroidism



**Figure 4 Chapped and glazed appearance of hand with dry plaques**



**Figure 5 Hand eczema with extreme dryness and fissuring**

- [6] Niepomniscse H, Amad RH. Skin disorders and thyroid diseases. *Endocrinol Invest* 2001; 24:628-38.
- [7] Abraham R, Murugan VS, Pukazhvanthen P, Sen SK. (2009) Thyroid disorders in women of Puducherry. *Indian J Clin Biochem.* 24: 52-59.
- [8] Verma I, Sood R, Juneja S, Kaur S. Prevalence of hypothyroidism in infertile women and evaluation of response of treatment for hypothyroidism on infertility. *International Journal of Applied and Basic Medical Research.* 2012; 2(1):17-19.
- [9] Velayutham K, Selvan SSA, Unnikrishnan AG. Prevalence of thyroid dysfunction among young females in a South Indian population. *Indian Journal of Endocrinology and Metabolism.* 2015; 19(6):781-784.

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**Bibliography-**

- [1] Unnikrishnan AG, Kalra S, Sahay RK, Bantwal G, John M, Tewari N. Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. *Indian Journal of Endocrinology and Metabolism.* 2013; 17(4):647-652.
- [2] Feingold KR, Elias PM. Endocrine Skin interactions. *J Am Acad Dermatol* 1987; 17:921-40.
- [3] Jamwal A, Sharma A, Rather PA. Cutaneous Manifestations of Hypothyroidism: Prospective Hospital Based Clinical Study. *J Adv Med Dent Scie* 2013; 1(2):5-12.
- [4] Heymann WR. Cutaneous manifestation of thyroid disease. *J Am Acad Dermatol* 1992; 26:85-902.
- [5] Dogra A, Dua A, Singh P. Thyroid and skin. *Indian J Dermatol.* 2006; 51:96-9.