

Study of Thyroid Function Tests in Cases of Polymorphic Light Eruption in Tertiary Care Institute

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Abstract

Background: Polymorphic Light Eruption (PLE) has been found to be associated with thyroid function abnormalities. **Aim:** To study and compare thyroid function tests in cases of polymorphic light eruption. **Methods:** The study included 35 cases of PLE and age- and sex-matched controls attending a skin outpatient department. Both cases and controls were tested for Thyroid-Stimulating Hormone (TSH). In case of abnormality in TSH, Triiodothyronine (T3) and Tetraiodothyronine (T4) levels were estimated. **Results:** TSH was elevated in 6 cases and 1 control. T3 and T4 were decreased in 4 cases and normal in 1 each in case and control. Hypothyroidism was seen among 6 cases and 1 control. **Conclusion:** Cases of PLE should be examined clinically for thyroid disorder and also tested for TSH to find any association and prevent serious consequences.

Keywords: Polymorphic Light Eruption, Tetraiodothyronine, Thyroid Function Tests, Thyroid-Stimulating Hormone, Triiodothyronine

1. Introduction

Polymorphic light eruption is an idiopathic photodermatitis with a probable autoimmune basis. It is a common, intermittent, sunlight or artificial UVR induced eruption, particularly at temperate latitudes, affecting subjects of any race within hours to rarely days of exposure, thereafter lasting days to a week or two once exposure ceases¹.

The eruption is generally symmetrical, itchy, erythematous or skin coloured, papular and non-scarring, but sometimes plaque like, vesicular, bullous or a combination of these can be present. It usually affects exposed skin, but rarely also on covered areas. It is commoner in young women, often worse in spring, and probably a delayed type hypersensitivity reaction against endogenous cutaneous photo-antigen¹.

Eruption of PLE is inducible by ultraviolet radiation exposure, whether from sunlight or artificial sources, particularly sunbeds².

Thyroid function abnormalities have found to occur in patients with sunlight associated dermatosis such as melasma and PLE³⁻⁵. Therefore, a comparative study of thyroid function tests would be carried out among minimum No. of 35 cases of PLE with equal number of controls.

2. Methods

The study was conducted in Department of Dermatology, Venereology and Leprology in a tertiary care centre and medical college. Minimum 35 subjects satisfying the eligibility criteria were taken and age, sex match controls

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without PLE were taken. Subjects were enrolled for study after taking a written informed consent. Complaints of patients noted on a proforma such as the rash on exposure to sunlight, artificial light or heat and whether transient or persistent. Associated sensations of itching, burning or pain along with swelling, oozing, discharge, fever, month of onset of rash, seasonal variation, treatment taken, discoloration, were also recorded.

Symptoms of thyroid disorder such as irritability, nervousness, depression, tiredness, change in weight, heat or cold intolerance, diarrhea, constipation, etc., had noted including menstrual history in females. History of similar illness in the past and in the family was also recorded.

Clinical examination of all cases and controls were done in a similar way. The palpable thyroid gland will be graded as per the five point scale designed by Lewinski⁶ in 2002 (grade 0: no goiter present, thyroid impalpable and invisible; grade Ia: thyroid gland, however palpable, remains invisible, even in full extension of neck, thyroid not enlarged; grade Ib: goiter palpable in normal position and visible in upright position, full extension of the neck; nodular goiters are also classified into this size range, even if they do not meet the criteria of enlarged thyroid gland; grade II: goiter visible in normal position of the neck,

no palpation required to diagnose thyroid enlargement; grade III: very large goiter, clearly visible from a distance).

Muco-cutaneous examination was done in PLE cases noting skin type as classified on a six point scale designed by Wolff in 1977. Distribution and type of lesions with secondary changes and lesions of associated diseases were recorded. In case of doubt in diagnosis, the patients were asked to avoid sunlight exposure by covering the exposed parts for 15 days and will be re-examined.

A blood sample (5 ml) will be taken from each case and control for the estimation of serum Thyroid Stimulating Hormone (TSH) levels in the endocrinology laboratory. If serum TSH level will be found abnormal, further investigations for the estimation of serum Triiodothyronine (T3) and Thyroxine (T4) will be done by immunotech kit.

3. Results

In our study, there was higher mean TSH value found in 17.1% of cases as compared to 2.9% of controls (Table 1). There was no case found having low TSH value. It was found statistically significant. This findings correlate well with the study conducted by Sharma et al⁷, in 2014 in which TSH was high in 24%, low in 1% of cases and high in 6%, low in 1% of controls

Table 1. TSH level amongst different study groups

Cases			Group		Total
Controls					
TSH	High	Count	6	1	7
		% within Group	17.1%	2.9%	10.0%
	Normal	Count	29	34	65
		% within Group	86.9%	97.1%	90.0%
Total		Count	35	35	70
% within Group		100.0%	100.0%	100.0%	

Chi square-31, df-17, P value -0.01 (S)

Table 2. T3 and T4 level amongst different study groups

T3 and T4 level			Group		Total
Cases					
Controls					
	Low	Count	4	0	4
		% within Group	11.4%	0.0%	5.7%
	Normal	Count	2	1	3
		% within Group	5.7%	2.9%	4.3%
Total		Count	35	35	70
% within Group		100.0%	100.0%	100.0%	

Chi square-1.5, df-2, P value -0.21 (NS)

In our study, low T3 and T4 level were found only in 11.42% of cases. While T3 and T4 level were normal in 5.71% cases and 2.85% controls which was not statistically significant (Table 2).

4. Discussion

In our study overt Hypothyroidism was found in 11.4% of cases but none in control, while subclinical hypothyroidism is seen in 5.7% of cases and 2.9% of controls. Similarly in the study conducted by K. A. Seetharam et al⁴, autoimmune hypothyroid disease was present in 25.9% of cases and 7.5% of controls. Out of 25.9% hypothyroids with PMLE, 13.39% was known hypothyroids and 12.5% (7.14% overt and 5.35% subclinical) were newly found in there screening. This findings correlate well with the study conducted by Sharma et al., in 2014⁶, in which overt hypothyroidism was present in 18% cases and 5% of controls and subclinical hypothyroidism was present in 6% of cases and 1% of controls. Similarly Kochupillai⁸ suggested a significant relation between PMLE and thyroid disease rather than a mere coincidence. Hasan et al⁵, stated that PMLE is a long standing, slowly ameliorating disease with some tendency to development of autoimmune disease or thyroid disorder, especially in female patients.

5. Conclusion

PMLE has a tendency toward development of diseases of autoimmune origin and thyroid dysfunctions and vice versa. Probably, the relation between the two diseases is immune dysfunction causing hypersensitivity reaction, and antibody generation in thyroid disease.

We suggest the screening for Thyroid should be done for all PMLE patients as they are prone to have thyroid disorders.

This relationship between the two needs to be further evaluated by involving a larger number of PMLE

patients, to substantiate whether this positive association is because of autoimmune dysfunction or causally related.

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