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Original Research Article

Melasma and thyroid profile: A case control

Suman Babu P S[1,*], Sridevi Patil C[1]

[1] *Dept. of Dermatology, Raichur Institute of Medical Sciences, Karnataka, India*

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ABSTRACT

Introduction: Melasma is one of the common hyper pigmentation disorders presenting with symmetrical brownish black patches on sun-exposed areas. Many studies have been conducted to determine the relationship between Melasma and thyroid autoimmunity.
Aims and objectives: to evaluate the relationship between thyroid profile and Melasma patients
Materials and Methods: A case control study was carried out evaluating thyroid status (serum T3, T4 and TSH) in 50 patients with Melasma and 50 individuals without Melasma. Statistical analysis was done.
Results: a total of 100 patients including both men and women were enrolled in the study. The age group was 20-50 years. The F: M ratio was 7:1 in both cases and controls. Five (5) patients in the Melasma group and three (3) patients in the control group showed hypothyroidism.
Conclusion: There is a suspicion in associating Melasma and thyroid disorders.

1. Introduction

Melasma is one of the common acquired, chronic and relapsing hypermelanotic disorder, presenting clinically with bilaterally symmetrical brown-black circumscribed patches affecting mostly sun-exposed areas of skin, especially the face. It is most prevalent among young to middle aged women who are dark skinned and of Asian or African origin.[1] Multiple factors have been proposed in its aetiopathogenesis like genetic factors, pregnancy, combined oral contraceptive pills(OCPs), exposure to sunlight, use of cosmetic preparations, thyroid gland dysfunction and drugs used for treatment of epilepsy.[1–4] Melasma affects men also, sharing the same clinical and histological features as in women, but hormonal factors do not seem to play an important significant role.[5] The most striking concern with regards to melasma is the resultant cosmetic and social stigma, which drives an individual to seek a prompt therapeutic solution. Depending on the sites of involvement over face, melasma is classified into three types: centrofacial, malar and mandibular.[2]

Whether to screen all patients with melasma for thyroid disorders is a matter of discussion and yet to be proved. Till date many studies have been conducted to define the relationship between Melasma and thyroid autoimmunity. Many studies say, there is association between melasma and hypothyroidism, few studies showed no significant relation between melasma and thyroid autoimmunity. So, this study was performed to evaluate the association between thyroid autoimmunity and melasma in our tertiary care centre of north Karnataka.

2. Materials and Methods

2.1. Patients and controls

This study received ethical committee clearance at our institute, Raichur Institute Of medical Sciences in 2017. This was a prospective case control study. Patients who attended our dermatology outpatient department

during the period march 2018 to august 2018 with the presenting complaints of melasma were enrolled in this study after taking informed consent in the local language. We enrolled 50 (fifty) patients(both males and females) in

* *Corresponding author*.
E-mail address: dermasuman@gmail.com (Suman Babu P S).

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Table 1: average serum levels of thyroid hormones in two groups

	Melasma group (n=50)	Control group (n=50)	P value
Serum T3 (ng/ml)	1.20±0.19	1.35±0.21	P = 0.756
Serum T4(μg/dl)	8.56±1.59	8.36±1.97	P= 0.93
Serum TSH μIu/ml	3.01±2.01	3.02±1.97	P = 0.444

Table 2: Prevalence of thyroid dysfunction betweenmelasma and control groups

Groups	Number of normal thyroid function	Number of hypothyroidism	Number of hyperthyroidism	P value
Melasma group (n= 50)	45	5	0	0.712
Control group (n=50)	47	3	0	

the age group between 20-50 years with melasma as cases and 50 age, sex matched individuals with no history of melasma as controls. Melasma was diagnosed by clinical examination using hand lens and if necessary by the help of Woods lamp examination.

Individuals who were excluded from the study were those (1)with pregnancy (2) known to have preexisting thyroid disease, (3) with coexistent any other autoimmune disorders or serious illness, (4) with history of drug intake that might interfere with thyroid function (steroids, lithium, amiodarone, iodide, heparin, beta blockers, anti-epileptics), (5) using pregnancy contraceptive medications and (6) patients on hormone replacement therapy.

We collected blood sample in sterile tubes with anticoagulant and sent to laboratory for the estimation of serum T3 (tri-iodo thyronine), T4 (thyroxine) and TSH (thyroid stimulating hormone) levels in all the cases and controls. A standardized questionnaire was used to obtain data.

Serum T3 and T4 were measured by radioimmuno assay method. Normal reference scale considered for T3 was 0.7-2.04 ng/ml and for T4 was 6.09-12.23 μg/dl. TSH was measured by immunoradiometric assay and the normal

reference range was 0.35-5.5μIu/ml. It was considered euthyroid if TSH, Serum T3 and T4 levels were within the normal limits. Hypothyroidism was considered when TSH was elevated above the normal limits and to confirm free T3 and free T4 was evaluated.

2.2. Statistical analysis

The statistical analysis of the data was carried out using IBMSPSS 22 version. Once the p value was calculated, a p value < 0.05 was considered as a statistically significant association. The results obtained were expressed as means $\pm$ standard deviation.

3. Results

50 cases with melasma and 50 controls without melasma were included in the study. The age distribution was between 20-50 years, female to male ratio was 7:1. Both the cases and controls were age and sex matched. The mean age group of the cases was 30.2 $\pm$ 3.4 years. The mean age group of the controls was 29.32 $\pm$ 5.6 years.

Average serum levels of the thyroid hormones (T3, T4 and TSH) in both the groups are shown in the Table 1. After calculating p value, we found that there was no significant difference in the mean levels of serum T3, T4 and TSH between the cases and the controls groups.

In melasma group out of 50 patients, 5 patients were found to be hypothyroid. Among 50 controls 3 individuals were found to be hypothyroid. There were no cases of hyperthyroidism.

There was no significant difference in the prevalence of thyroid disorders between the cases and the controls as the p value obtained was 0.712(p value $>$0.05) as shown in Table 2

4. Discussion

Thyroid dysfunction is the most common endocrine disorder associated with a wide range of manifestations. One of the organs that presents with a wide range of clinical signs and symptoms is the skin.[6] The smooth functioning of the skin and hair depends on the general condition of the individual and it is controlled by circulating hormones such as the thyroid. Any major changes in thyroid gland function may present with skin manifestations such as change in color, texture, pigmentary disorders, hair fall, bullous lesions, photosensitivity etc.,

Many studies noticed various skin manifestations, especially melasma with thyroid disorders. In a study performed by Alka Dogra, pigmentary disorders were found in 37.5% of the patients with hypothyroidism.[7] In a study conducted by Lutfi et al,[8] thyroid disorders were 4 times more prevalent in patients than controls. In an another study performed by Kiani et al,[9] also found thyroid disorders 3.4 times more prevalent in cases than controls.

Yazdanfar et al[10] conducted a study in 2010; found that there is no significant difference between melasma cases and controls.

In our study mean serum TSH levels in melasma group was 3.01$\pm$ 2.01 and in controls it was 3.02 $\pm$1.97 μIu/ml

which are almost same. We found no significant difference between cases and controls.

5. Conclusion

Few cases in our study were found to have hypothyroidism, but the mean levels of T3, T4 and TSH parameters showed no significant difference between cases and controls. This shows doubt in association of thyroid disorders and melasma. We suggest further studies with large sample size on melasma patients with coincidental thyroid disorders be performed.

6. Source of funding

None.

7. Conflict of interest

None.

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Author biography

Suman Babu P S Assistant Professor

Sridevi Patil C Senior Resident

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