Journal of Clinical & Experimental Dermatology Research

Aboobacker and Karthikeyan, J Clin Exp Dermatol Res 2017, 8:6
DOI: 10.4172/2155-9554.1000429

Research Article Open Access

Melasma and Hypothyroidism: Conflicting Coexistence?

Shamma Aboobacker[1*] **and Kaliaperumal Karthikeyan**[2]

[1]*Dermatology, Venereology and Leprology Department, KMCT Medical College and Hospital, Kerala, India*

[2]*Dermatology, Venereology and Leprology Department, Sri Manakula Vinayagar Medical College and Hospital, Kalitheerthalkuppam, Madagadipet, Puducherry,*

[*]**Corresponding author:** Shamma Aboobacker, Dermatology, Venereology and Leprology Department, KMCT Medical College and Hospital, Kerala, India, Tel: +971528040809, +919597191066; E-mail: shamma.aboo@gmail.com

Received date: October 04, 2016; **Accepted date:** October 23, 2017; **Published date:** October 27, 2017

Abstract

Introduction: The most striking concern with regard to melasma is the resultant cosmetic and social stigma, thereby procuring a prompt therapeutic approach. This study aims at correlating thyroidal etiology in terms of proportion affected and presentation of melasma in relation to non-thyroidal etiology.

Methodology: An analytical cross sectional study was carried out evaluating thyroid status in melasma patients.

Results: A total of 103 cases, aged 20-60 years with F:M ratio of 7.6:1 showed hypothyroidism in 25 patients; of which 4 were newly diagnosed and 8 subclinical. Presentation of melasma in hypothyroid cases showed dermal preponderance and higher MASI.

Conclusion: Hypothyroidism accounts for a considerable proportion of melasma that suggests an evaluation of hormonal profile is essential irrespective of severity of melasma.

Keywords: Melasma; Hypothyroidism; Subclinical hypothyroidism; MASI

Introduction

Melasma is an acquired pigmentary disorder described as symmetrical blotchy or splotchy hyperpigmented macules and patches specifically inflicting the face and rarely forearms. The term melasma is derived from the Greek word 'melas' meaning black. Also referred to as chloasma from the Greek word 'chloazein' meaning green according to the appearance in pregnancy however this is taken as a misnomer [1]. The earliest report of melasma is with regard to Chinese medicine wherein it was referred to as 'Lihei Ban' meaning a persistent condition [2]. A variety of factors including sun exposure, drugs, genetic influence and emotional factors have been linked to melasma wherein the primary cells involved are the pigment producing melanocytes that originate from the neural crest and can be influenced by cells in close proximity (keratinocytes, fibroblasts) [3]. In similarity with distribution of lesions in melasma, the highest concentration of melanocytes in normal persons is mapped to the face and forearms [4].

The most striking concern with regard to melasma is the resultant cosmetic and social stigma, thereby procuring a prompt therapeutic approach. The overall outlook aims at obvious etiological factors however does not deal with more linkable/treatable factors such as hormonal imbalances.

This study aims at correlating thyroidal etiology in terms of proportion affected and presentation of melasma in relation to non-thyroidal etiology, thereby emphasizing on a more detailed evaluation.

Methodology

An analytical cross-sectional study was undertaken in the dermatology department of a tertiary care hospital, Puducherry from October 2012 to March 2014. After approval by the institutional ethics committee, subjects were selected based on characteristic features of melasma while excluding other pigmentary dermatoses. Prior use of allopathic treatment for melasma was exclusion criteria due to resultant interference with findings.

The protocol undertaken after obtaining informed consent included a detailed history, examination, MASI scoring for assessment of severity and thyroid evaluation (T3, T4, TSH) that were then entered into a preformed proforma.

Statistical analysis was carried out using SPSS software version 11.0 and Microsoft Excel 2007, through Student t-test and Chi square test.

Results

The study group comprised of 103 cases, aged 20–60 years (mean 37.4 ± 7.8) with female to male ratio of 7.6:1. In respect to presentation, mean time scale of melasma was 2.6 ± 3.9 years, malar type predominated (57.3%) as clinical type, while dermal (61%) under Wood's lamp. Assessment of MASI showed mean score of 15.3 ± 9.4 with majority linked to 10.1–20 (46.6%) range.

Thyroid evaluation

Thyroid profiles were evaluated based on a grading outlined in an epidemiological study in Puducherry for the purpose of comparing hormonal imbalance in the specified population. A total of 25 cases of hypothyroidism and 2 cases of hyperthyroidism were found. On dwelling further on hypothyroidism, 13 were previously diagnosed

(0.5–20 years), 4 newly diagnosed and 8 subclinical hypothyroidism (SCH).

While comparing the basic parameters of euthyroid and hypothyroid cases, a female preponderance (24:1) is seen in hypothyroid group (Table 1). On testing the equality of gender distribution amongst the two groups, a significant value of 0.013 demonstrates similar probability thereby indicating both melasma and hypothyroidism accounts for female predisposition.

		Euthyroid (n=76)	Hypothyroid (n=25)	P value
Age (yrs)		36.4 ± 7.1	40.2 ± 9.7	1.87
Gender	Male	14.5%	4%	0.013
	Female	85.5%	96%	
Melasma duration (yrs)		2.6 ± 4.2	2.1 ± 2.1	0.377

Table 1: Demographic and clinical data of the study group while comparing euthyroid and hypothyroid cases with respective significance values. Female predilection is considerably higher in the hypothyroid group.

Melasma and hypothyroidism

On assessment of the presentation of melasma in hypothyroid patients, the duration of melasma seems shorter compared to euthyroid group while the most common type was malar type, 14 (58.3%), which is in accordance to euthyroid group, as depicted in Table 2. However, the Wood's lamp findings were specific for revealing an absence of epidermal type in hypothyroidism while being identified in the remaining cases. By analyzing the values using Chi square test, the clinical presentation (p value=0.78) had no significance apart from dermal preponderance in hypothyroid cases (p value=0.034). Evaluation of MASI scores showed a higher severity in hypothyroid group that is marginally significant (p value=0.058). Additional valuation to melasma revealed 3 cases of predated melasma within previously diagnosed hypothyroidism.

Discussion

Hormonal derangements encompass a variety of disorders that usually go unnoticed unless certain signs prompt specific investigation. In order to label melasma as a probable sign of thyroidal etiology, the findings were analyzed.

In comparison to a large scale study conducted on subjects in the same locality showing 9.5% and 11% of hypothyroidism and SCH respectively, our findings point to higher values with melasma. Furthermore, as depicted in Table 3, a considerable higher value can be noted with melasma in comparison to studies conducted in the general population [5-13].

To assess this matter in depth, previous studies evaluating thyroid functions in melasma were looked upon as outlined in Table 4 showing higher proportions of hypothyroidism. On comparing values of tables 3 and 4 it can be appreciated that an association of hypothyroidism in melasma does exist.

Dwelling further, melasma in hypothyroid individuals was investigated and as shown in table 5, considerable proportions are affected.

		Euthyroid (%)	Hypothyroid (%)	Statistics
Clinical type	Malar	44 (59)	14 (56)	Chi square test X2=0.07 df=1 p value=0.792
	Centrofacial	31 (41)	10 (40)	
	Mandibular	0 (0)	1 (4)	
	Extrafacial	1 (1)	0	
Wood's lamp	Epidermal	10 (13)	0 (0)	
	Dermal	43 (57)	20 (80)	X2=4.48 df=1 p value=0.034
	Mixed	23 (30)	5 (20)	X2=0.86 df=1 p value=0.353
Mean MASI		13.9 ± 8.6	17.8 ± 9.7	0.058

Table 2: Clinical presentation of melasma comparing euthyroid and hypothyroid groups. A dermal preponderance and higher MASI scores are noted in hypothyroid group.

	Hypothyroidism	Subclinical hypothyroidism (%)
Present Study	24.3%	7.8
Vanderpump (5)	0.6-12/1000 Females 1.3-4.0/1000 Males	
Doshi (6)	11.0% 15.9% Females 5% Males	8.0
Abraham (7)	9.5%	2.0
Unnikrishnan (8)	11.0%	8.0
Lutfi (9)	58.3%	

Table 3: A probe into epidemiology of hypothyroidism in comparison to present study and similar studies on melasma outlines a higher proportion in melasma.

	Hypothyroidism (%)
Current study	24.3
Kiani, Ahmari and Rezvan (10)	37.8
Talaee et al (11)	31.5

Table 4: Comparison of current study with previous studies evaluating hypothyroidism in Melasma patients.

Regarding the increased occurrence of SCH in melasma, it may be hypothesized that it signifies an autoimmune process as suggested by

Pearce et al. [14]. This would in turn reason the age of onset and increased female affliction. Lutfi et al. primarily mentioned this fact with the finding of positive autoimmune titers showing correlation to pregnancy and oral contraceptive intake as well as occurrence of SCH [15]. Even though the present study hasn't dealt with autoimmune thyroiditis, the finding of SCH may prefer this notion.

To indicate the significance of evaluating thyroid function, a mention of a novel therapeutic agent of melasma, methimazole, would seem appropriate. Previous studies point at an assumable depigmenting action, however it may be hypothesized that a mechanism targeting thyroidal etiology takes place [16,17]. This would have to be studied further for a valid conclusion.

	Melasma (%)
Haritha and Sampath (12)	14.3
Dogra and Dua (13)	18.8
Jamwal et al (14)	37

Table 5: Review of studies evaluating the epidemiology of Melasma affecting hypothyroid patients.

Conclusion

Herewith we conclude that hypothyroidism can be accountable for a considerable proportion of melasma, thereby showing marked female predisposition. The features of dermal type and marginally high MASI score with hypothyroidism were also noted. Due to the lack of comparison to a control group this study may not be sufficient to label melasma as a probable sign of thyroidal etiology however suggests that an evaluation of hormonal profile is essential irrespective of severity of melasma and further study would be warranted.

Acknowledgement

We authors hereby extend gratitude to Prof Amol Dongre for appropriate statistical guidance.

References

1. Miot LD, Miot HA, Silva MG, Marques ME (2009) Physiopathology of melasma. An Bras Dermatol 84: 623-635.
2. The TCM ancient literature research on Melasma (2012) Medical Research.
3. Kim JY, Lee TR, Lee AY (2013) Reduced WIF-1 expression stimulates skin hyperpigmentation in patients with melasma. J Invest Dermatol 133: 191-200.
4. Ranson M, Posen S, Mason RS (1988) Human melanocytes as a target tissue for hormones: in vitro studies with 1 alpha-25, dihydroxyvitamin D3, alpha-melanocyte stimulating hormone, and beta-estradiol. J Invest Dermatol 91: 593-598.
5. Vanderpump MPJ (2011) The epidemiology of thyroid disease. Br Med Bull 99: 39-51.
6. Doshi DN, Blyumin ML, Kimball AB (2008) Cutaneous manifestations of thyroid disease. Clin Dermatol 26: 283-287.
7. Abraham R, Srinivasa Murugan V, Pukazhvanthen P, Sen SK (2009) Thyroid disorders in women of Puducherry. Indian J Clin Biochem 24: 52-59.
8. Unnikrishnan AG, Kalra S, Sahay RK, Bantwal G, John M, et al. (2013) Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. Indian J Endocrinol Metab 17: 647-652.
9. Lutfi RJ, Fridmanis M, Misiunas AL, Pafume O, Gonzalez EA, et al. (1985) Association of melasma with thyroid autoimmunity and other thyroidal abnormalities and their relationship to the origin of the melasma. J Clin Endocrinol Metab 61: 28-31.
10. Kiana A, Ahmari M, Rezvan FMR (2006) Association of melasma with thyroid disorders: a case control study. Ir J Dermatol 9: 154-158.
11. Talaee R, Ghafarpasand I, Masror H (2015) The Relationship Between Melasma and Disturbances in the Serum Level of Thyroid Hormones and Indices. Med J 2: 19-23.
12. Haritha S, Sampath KK (2013) Skin manifestations of hypothyroidism – A clinical study. IOSR JDMS 7: 58-60.
13. Dogra A, Dua A (2006) Cutaneous changes in hypothyroidism. J Ind Thyroid Soc 45-9.
14. Jamwal A, Gupta V, Sharma A, Rather PA (2013) Cutaneous manifestations of hypothyroidism: Prospective hospital based clinical study. J Adv Med Dent Sci 1: 5-12.
15. Pearce SH, Brabant G, Duntas LH, Monzani F, Peeters RP, et al. (2013) ETA Guideline: Management of Subclinical Hypothyroidism. Eur Thyroid J 2: 215-228.
16. Malek J, Chedraoui A, Nikolic D, Barouti N, Ghosn S, et al. (2013) Successful treatment of hydroquinone-resistant melasma using topical methimazole. Dermatol Ther 26: 69-72.
17. Kasraee B, Handjani F, Parhizgar A, Omrani GR, Fallahi MR, et al. (2005) Topical methimazole as a new treatment for postinflammatory hyperpigmentation: report of the first case. Dermatology 211: 360-362.