ORIGINAL ARTICLE

Frequency of Thyroid Dysfunction in Melasma Patients

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ABSTRACT

Background: Symmetrical hyper-pigmentation on the face is the characteristic of melasma.
Aim: In current project, goal was to determine the frequency of thyroid dysfunction in melasma patients of a tertiary care hospital.
Study design: It was a a cross-sectional study.
Methodology: With the sample size of 150 melasma patients, current study was carried out from September 2017 to March 2018 at the department of Dermatology, Jinnah Hospital, Lahore following the approval by Hospital's Ethical Committee. Early morning blood sample was taken from all enrolled patients fulfilling the inclusion criteria and sent to the lab for thyroid function test (FT4 and TSH). Thyroid dysfunction was categorized as hypothyroidism and hyperthyroidism. Data was entered and analyzed by Statistical Package for Social Sciences (SPSS software, version 21). Chi-square test was applied as p-value ≤ 0.05 was considered significant.
Results: In present study, patients (n=150) of both genders were included with the age (18-50 years) having a mean ± SD of 31.07±8.91 years. Among 150 patients, duration of melasma ranged from 1-6 years Results showed 29 (19.3%) had thyroid dysfunction among 150 patients. Majority cases were sub-clinically hypothyroid.
Conclusion: Thyroid dysfunction can be associated with melasma which can be sub-clinically hypothyroid.
Keywords: Melasma; Thyroid Function Tests; Hypothyroid and Hyperthyroid.

INTRODUCTION

An acquired disorder (melasma) featured by symmetrical hyper pigmentation presenting as macules on the face[1]. There are patches on face as well. Young to middle aged females suffer from it mostly who belong from different ethnicities like Hispanic, Asian, Africans or Middle East descent that is darker skin prototypes. Its pathogenesis is undiscovered till today but there are many known triggering agents. They include sun exposure, pregnancy, sexual life, hormonal disturbances and use of cosmetics, steroids, anti-seizure drugs and photosensitizing drugs[2].

Its a very common skin disorder, accounting for 0.25 to 4% of the patients seen in Dermatology Clinics in South East Asia, and is the most common pigment disorder among Indo Pak region[3]. In one previous study held at Barzil in 2010, 1500 adults Barazillian patients were enrolled. In that study, pigmentation disorders were reported as the main cause of demand for dermatological care by 23.6% of men and 29.9% of women[5]. According to a survey of 57,343 diagnoses performed at dermatological consultations in Brazil that was conducted by the Brazilian Society of Dermatology (BSD) in 2006, melanodermias (among them, melasma) represented the third largest group of diseases in dermatological practice, accounting for 8.4% of all complaints. This prevalence varied from region to region within country ranging from 5.9% to 9.1%[6].

Different regimes and laser therapies are being used for the treatment of melasma which are Kojic acid (3%)+Vitamin C (2%) cream, Azelaic acid (20%) cream, but none has been proven to be 100% effective (4). It severely affects females socially, emotionally, economically as a treatment cost and creates mental as well as physical health issues.

There is a significant frequency of thyroid dysfunction in patients having melasma[7]. As thyroid dysfunction may be another cause of it which is a treatable and due to the lack of local published data on this topic, we planned this current study in the local population to see the frequency of thyroid disorders among melasma patients in a tertiary care hospital. By treating thyroid disorders, this condition may resolve which will help us in reducing the psychological and economic stress of the disease especially among females.

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METHODOLOGY

It was a cross-sectional study conducted in Department of Dermatology, Jinnah Hospital, Lahore, Pakistan, from September 2017 to March 2018 following the approval by Hospital's Ethical Committee. The sample size of 150 was estimated by 95% confidence level and 7% margin of error while taking expected frequency of thyroid dysfunction to be 18.5% among melasma patients[7]. Patients were enrolled by non-probability consecutive sampling. Diagnosed patients of melasma including both genders with age range (18-50 years) presenting to dermatology outdoor were enrolled. Exclusion criteria involved patients who were unable to give informed consent, taking anti thyroid drugs or thyroxin in last 6 months as per history and clinical record, having any organ failure/disease and pregnant females. Written informed consent was taken from the patient at the time of enrollment. Early morning

blood sample was taken and sent to the lab for thyroid function test (FT4 and TSH). Thyroid dysfunction was categorized as hypothyroidism and hyperthyroidism.

Statistical analysis: Data was entered and analyzed by Statistical Package for Social Sciences (SPSS software, version 21). Quantitative data like age (in years), serum T4 and TSH were presented as Mean± S.D. The categorical data like gender, Thyroid dysfunction (hypo or hyperthyroidism) were offered as frequency and percentages. Modifiable factors like age and duration of melasma were controlled by stratification of data. Chi-square test was applied as p-value ≤ 0.05 was considered significant

RESULTS

In this study, 150 melasma patients were included. Patients age ranged from 18-50 years with a mean ± SD calculated was 31.07±8.91 years. Demographic parameters like serum TSH, serum free T_4, gender, age and duration of melasma were noted at the time of enrollment. Table:1 given below shows the frequency of parameters among subjects.

Thyroid dysfunction was observed in 29 (19.3%) patients. It was hypothyroidism in 26 (17.3%) patients and hyperthyroidism in 3 (2.0%) patients as summarized in table-2 below. It was subclinical in all the patients enrolled in current study.

Data was stratified for age and duration of disease in-order to compare the frequency of thyroid dysfunction across the various groups. Results were summarized in table-3 below that showed insignificant difference in the frequency of thyroid dysfunction.

Table-2: Frequency of Thyroid Dysfunction of Melasma Patients (n=150)

Gender	**Frequency**	**Percent (%)**
Male	23	15.3
Female	127	84.7
Age Groups		
18-34	102	68
35-50	48	32
Duration of Melasma (years)		
1-3	97	64.7
4-6	53	35.3
Serum Markers	**Range**	**Mean ± SD**
TSH (U/ml)	0.3-5.9	4.95±1.62
Free T4 (µg/dl)	4.9–13.5	9.10±2.74

Table-2: Frequency of Thyroid Dysfunction of Melasma Patients (n=150)

Thyroid Dysfunction	**Frequency**	**%age**
Yes	29	19.3
Hypothyroid	26	17.3
Hyperthyroid	3	2.0
No	121	80.7

Table-3: Comparison of Frequency of Thyroid Dysfunction across Various Groups

Age groups	**Thyroid Dysfunction**		**Total**	**P value**
	Yes (n=29)	**No(n=121)**		
	20	82	102	
18-34 years	19.6%	80.4%	100%	
	9	39	48	0.901
35-50 years	18.8%	81.2%	100%	
Total	29(19.3%)	121(80.7%)	(100%)	
Duration of Disease				
	18	79	97	
1-3 years	18.6%	81.4%	100%	
	11	42	53	0.745
4-6 years	20.8%	79.2%	100%	
Total	29(19.3%)	121(80.7%)	150(100%)	

DISCUSSION

In the present study, the mean age of the patients was 31.07±8.91 years. A similar mean age of 30.28±8.08 years has been reported by Murtaza et al. (2016) among such patients presenting at Lady Reading Hospital (LRH), Peshawar[8]. Yazdanfar et al. (2010) reported similar mean age of 30.04±6.72 years among such patients in Iranian population[9].

There were 23 (15.3%) male and 127 (84.7%) female patients with a male to female ratio of 1:5.5. A similar female predominance has been reported by Aamir et al. (1:6.1) and Murtaza et al. (1:5.7) among such patients in local population[8,10].

The duration of disease ranged from 1 year to 6 years with a mean of 2.87±1.42 years. Our observation is in line with that of Murtaza et al. who also observed similar mean duration of disease (2.50 years) at presentation among such patients at Lady Reading Hospital (LRH), Peshawar[8].

In the present study, serum TSH level ranged from 0.3 U/ml to 5.9 U/ml with a mean of 4.95±1.62 U/ml while the serum free T4 level ranged from 4.9µg/dl to 13.5µg/dl with a mean of 9.10±2.74µg/dl. Yazdanfar et al. (2010) reported similar mean serum TSH (2.70±1.83 U/ml) and FT_4 (7.64±1.28µg/dl) levels among melasma patients in Indian population[9].

Thyroid dysfunction was observed in 29 (19.3%) patients. It was hypothyroidism in 26(17.3%) patients and hyperthyroidism in 3(2%) patients. It was subclinical in all the patients and there was no case of overt thyroid dysfunction. A similar frequency of thyroid dysfunction was observed by Mogaddam et al. (18.5%) in Iranian such patients[7]. They also reported similar frequencies of hypo- (17.1%) and hyper- (1.4%) thyroidism. A much lower frequency of thyroid dysfunction was observed by Ikino et al[11].

Our study had a number of limitations like financial constrains and less resources. we didn't correlate the outcome of treatment in such patients with and without thyroid dysfunction which would have further highlighted the etiological effect of thyroid dysfunction in melasma patients.

CONCLUSION

Thyroid dysfunction can be associated with melasma which can be sub-clinically hypothyroid. It is therefore recommended that evaluation of melasma patient for thyroid dysfunction should be a routine in-order to lessen its burden from society.

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