Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 08, 2023

Original research article

Clinical profile of patients subjected for 40% lactic acid peel versus 40% mandelic acid peel in periorbital melanosis

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Abstract

POH clinically presents with light colored to dark colored, brown to black pigmentation in the periocular region. Due to POH, patient will have a tired look on the face. It is the clinical examination which mainly aids in the diagnosis of POH. True pigmentation of the eyelid skin has to be differentiated from the shadowing effect caused due to tear trough deformity. All the patients attending the dermatology OPD were screened for periorbital melanosis. Detailed history was taken and clinical examination was performed in the patients with periorbital melanosis. Dermatological examination of the periorbital area was also done to determine the type of periorbital melanosis (vascular and structural type were excluded by a stretch test). In the study, the most common risk factor for POM was rubbing eyes (56.7%) followed by stress (53.33%). 40% had aggravation on sunlight exposure, 36.7% had sleep less than 6 hours, 26.7% had atopy, 26.7% had watching TV/computer for >6 hours and 26.7% had similar complaints in family. Drug intake and eye drops use was seen in 6.7% each.

Keywords: Periorbital melanosis, lactic acid peel, mandelic acid peel

Introduction

Periorbital melanosis-is also called as periorbital hyperpigmentation (POH), periocular hyperpigmentation, dark circles, infraorbital darkening, infraorbital discoloration, idiopathic cutaneous hyperchromia of the orbital region. It is a common dermatological condition [1].

This condition is ill-defined. Clinically, it presents as bilateral round or semicircular homogenous brown or dark brown pigmented macules in the periocular region. It affects individual's quality of life & emotional well-being [2].

In a study by Sheth PB *et al*., 200 patients of POH were studied. Out of which 95 (47.50%) of them belonged to age group of 16-25 years. It was found to be more prevalent in females (162 [81%]) than males and the majority of the affected of them were housewives (91 [45.50%]) [3].

POH clinically presents with light colored to dark colored, brown to black pigmentation in the periocular region. Due to POH, patient will have a tired look on the face. It is the clinical examination which mainly aids in the diagnosis of POH. True pigmentation of the eyelid skin has to be differentiated from the shadowing effect caused due to tear trough deformity. These two conditions can be differentiated by manual stretching of the lower eyelid skin. If it is due to true pigmentation, it retains its appearance with stretching. But if it is due to shadowing, it improves or resolves entirely. In presence of thin eyelid skin or increased vascularity of lower eyelid, on manual stretching of the lower eyelids there will be an increase in violaceous discoloration of the eyelid skin [4].

Epidermal & dermal pigmentation can be differentiated by performing Wood's lamp examination. Wood's lamp examination results in the enhancement of the epidermal pigmentation, where as the contrast is less pronounced in case of dermal pigmentation. Periorbital puffiness can be differentiated from the vascular cause by using ultrasonography [5, 6].

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 08, 2023

Methodology

All the patients attending the dermatology OPD were screened for periorbital melanosis. Detailed history was taken and clinical examination was performed in the patients with periorbital melanosis. Dermatological examination of the periorbital area was also done to determine the type of periorbital melanosis (vascular and structural type were excluded by a stretch test). 30 patients who fulfilled the inclusion and exclusion criteria were enrolled for the study after explaining the study requirement in the language they understand and written informed consent was taken. Test peel was done in the retroauricular area skin before starting the treatment.

Inclusion criteria

1. Patients presenting with periorbital melanosis.
2. Age > 18 years.

Exclusion criteria

1. Patients who have not given consent.
2. Patients on topical depigmenting agents in the previous 2 weeks.
3. Pregnancy & lactation.
4. Patients with chronic debilitating disease.
5. Patients with generalized pigmentation of the face.
6. Patients with active bacterial, viral, fungal infection.
7. Patients with keloidal tendency.
8. Patients with known allergy to peeling agents (lactic acid, mandelic acid).
9. Patients who develop allergy or untoward reactions on test peel.
10. Patients with vascular type and structural type of periorbital melanosis.

Results

Table 1: Age wise Distribution of the Study Population

		No.	%
Age	<20 years	4	13.3%
	21 to 30 years	18	60.0%
	31 to 40 years	7	23.3%
	>40 years	1	3.3%
	Total	30	100.0%

In the study, majority of the subjects were in the age group 21 to 30 years (60%), 23.3% were in the age group 31 to 40 years, 13.3% were in the age group <20 years and 3.3% were in the age group >40 years.

Table 2: Distribution of Study Subjects According to Sex

		No.	%
Sex	Female	26	86.7%
	Male	4	13.3%
	Total	30	100.0%

In the study, 86.7% were females and 13.3% were males.

Table 3: Onset Distribution among Subjects

		No.	%
Onset	Insidious	29	96.7%
	Sudden	1	3.3%
	Total	30	100.0%

In the study, 96.7% had insidious onset and 3.3% had sudden onset.

Table 4: Occupation Distribution among Subjects

		No.	%
Occupation	Homemaker	14	46.7%
	Student	9	30.0%
	Tailor	1	3.3%
	Nurse	1	3.3%
	Teacher	1	3.3%
	Computer operator	1	3.3%
	Farmer	2	6.7%

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	Butcher	1	3.3%
	Total	30	100.0%

In the study, majority of the subjects were homemakers (46.7%), 30% were students and others as shown in above table.

Table 5: Duration of POM among the Subjects

		No.	%
Duration	<12 months	8	26.7%
	13 to 24 months	4	13.3%
	25 to 36 months	6	20.0%
	37 to 48 months	3	10.0%
	49 to 60 months	3	10.0%
	61 to 72 months	3	10.0%
	>72 months	3	10.0%
	Total	30	100.0%

In the study, majority of the subjects had duration of <12 months (26.7%), followed by 25 to 36 months in 20%, 13 to 24 months in 13.3% and others as shown in above table.

Table 6: Distribution of risk factors for POM among subjects

	No.	%
Atopy	8	26.7%
Rubbing eyes	17	56.7%
Aggravation on sunlight exposure	12	40.0%
Eye drops use	2	6.7%
Drug intake	2	6.7%
Sleep less than 6 hours	11	36.7%
Watching TV/computer for >6 hours	8	26.7%
Similar complaints in past	0	0.0%
Similar complaints in family	8	26.7%
Stress	16	53.33%

In the study, the most common risk factor for POM was rubbing eyes (56.7%) followed by stress (53.33%). 40% had aggravation on sunlight exposure, 36.7% had sleep less than 6 hours, 26.7% had atopy, 26.7% had watching TV/computer for >6 hours and 26.7% had similar complaints in family. Drug intake and eye drops use was seen in 6.7% each.

Table 7: Systemic Association of POM among Subjects

		No.	%
Systemic illness	DM	2	6.7%
	Obesity	3	10%
	Nil	25	83.3%

In the study, 6.7% had diabetes mellitus (DM), 10% had obesity and others had no systemic illness.

Table 8: General Physical Examination Findings among Subjects

		No.	%
GPE	Normal	23	76.7%
	Pallor	7	23.3%

In the study, on general physical examination (GPE) it was found that 23.3% of the subjects had pallor.

Discussion

The age of the subjects enrolled in this study ranged from 18 to 49 years which is in accordance with the study by Hassan *et al*., [7] in which patient's age ranged from 18 to 50 years. We found it to be more common in the age group of 21-30 years (60%) which is similar to the study by Chaterjee *et al*., [8] where the most common age group was 21-30 years (40.2%). Whereas in a study by Sheth PB *et al*., [3] the most common age group was 16-25 years (47.5%).

Strachan *et al*., [9] has stated that genetic conditions are not necessarily congenital (present at birth). The genotype is fixed at conception, but the phenotype may not manifest until adult life. In such cases the penetrance is age‐related, which supports the age of onset of POM in majority of the subjects in our study was in early adulthood, i.e., 21-30 years.

ISSN:0975 -3583,0976-2833 VOL14, ISSUE 08, 2023

Male to female ratio in this study is 1:6.5 showing female preponderance. Females comprised of 86.7% and males 13.3%. A similar female predominance was also reported by Vavouli *et al*., [10] where the male to female ratio was 1:29. In a study by Sheth PB *et al*., [3] male to female ratio was found to be 1:4.2. This huge difference between the gender may be due to increased cosmetic concern which the women have and thus approach the dermatologist seeking remedy.

In this study, 96.7% had insidious onset and 3.3% had sudden onset. This is similar to the study by Chaterjee *et al*., [8] in which 100% of the patients had insidious onset.

In this study, we found that majority of the subjects were homemakers (46.7%), 30% were students and 6.7% were farmers. Tailor, nurse, teacher and butcher constituted 3.3% each. In a study by Chaterjee *et al*., [8] majority of the patients were housewives (62.2%), followed by students (25.6%). Higher incidence of POM in housewives was also seen in a study by Sheth PB *et al*., [3] People from various occupations were affected in this study which indicates that when exposed to similar environmental factors & other risk factors, any individual may develop POM. Higher incidence of POM in housewives may be probably due to increased exposure to sunlight during work (e.g. putting clothes to dry), shopping etc.

In this study, duration of POM among the subjects ranged from 3 to 30 years. Majority of them had duration of <12 months (26.7%), followed by 25 to 36 months in 20%, 13 to 24 months in 13.3%, 37 to 48 months in 10%, 49 to 60 months in 10%, 61 to 72 months in 10% and >72 months in 10%. Hassan *et al*., [7] reported a study in which the duration varied from 3 to 10 years.

In our study, the most common risk factor for POM was rubbing of the eyes (56.7%). The other risk factors were stress (53.33%), sunlight exposure (40%), sleep less than 6 hours (36.7%), atopy (26.7%), watching TV/computer for >6 hours (26.7%), similar complaints in family (26.7%), drug intake (6.7%) and eye drops usage (6.7%).

POM developing secondary to rubbing of eyes is due to the post inflammatory hyperpigmentation. Rubbing of eyes could be habitual (30%) or secondary to dry itchy skin as seen in atopic dermatitis (26.7%).

In this study, 53.3% of the subjects gave history of stress. Stress induced POM may be due to increased secretion of melanocyte stimulating hormone in response to stress. Whether stress induces POM or vice versa is difficult to differentiate. In a study by Sheth PB *et al*., 71% of patients had positive history of stress [3].

Sleep less than 6 hours and watching TV/computer for more than 6 hours can cause inadequate rest to the eyes resulting in exhaustion of periocular muscles and thus contributing to POM. Study by Chaterjee *et al*., [8] reported a similar history of exhaustion of eyes in 86.7% of the patients.

40% of the subjects had aggravation of POM on exposure to sunlight, blaming it for the pigmentation. Most of the students gave history of sun exposure while travelling to and from the college. Farmers attributed the nature of their job to excessive sun exposure.

Familial cause was seen in 26.7% of subjects in this study, indicating the role of genetic factors in the causation of POM. Similar positive family history was seen in 19.51% of patients in a study by Chaterjee *et al*., [8] In a study by Ranu *et al*., [11] family history of periorbital hyperpigmentation was seen in 42.2% of patients. Goodman *et al*., [12] reported POH to be an autosomal dominant trait which usually runs in the families.

In this study, 6.7% had diabetes mellitus, 10% had obesity and others had no systemic illness. In a study by David BG *et al*., [13] 2.8% had diabetes mellitus, 2.4% had hypertension, 2% had hypothyroidism. But no statistically significant association was seen.

In this study, on general physical examination (GPE) it was found that 23.3% of the subjects had pallor indicating patients had anemia. Similar finding was seen in a study by David BG *et al*., [13] where 20.8% of the patients had iron deficiency anemia. This association between anemia and POM is possibly because enough oxygen is not reaching the periorbital tissues or due to facial pallor which makes the periorbital region appear comparatively darker [14].

Conclusion

- 96.7% of the subjects had insidious onset.
- Most of the subjects were homemakers (46.7%).
- Majority of the subjects had duration of < 12 months.
- Most common risk factor for POM was rubbing of eyes (56.7%), followed by stress (53.33%) and sunlight exposure (40%).
- Familial cause was seen in 26.7% of the subjects.

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ISSN:0975 -3583,0976-2833 VOL14, ISSUE 08, 2023

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