



## CLINICAL AND DERMOSCPIC STUDY OF PERIORBITAL HYPERPIGMENTATION

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### ABSTRACT

**Background:** Periorbital hyperpigmentation (POH) is a common aesthetic facial condition encountered in dermatology practice. It is characterized by bilateral homogenous, hyperchromic macules involving upper & lower eyelids. It can extend towards eyebrows, malar region & lateral side of nasal bridge. Many pigmentary disorders like acanthosis nigricans, dermal naevi, pigmentary demarcation lines (PDL) can appear over periorbital area, to differentiate these dermatosis dermoscope can be used. It is a non invasive tool that aids in the diagnosis of dark circles. Dermatoscope helps to visualize special features and patterns below the skin surface, which in turn assists the physician to detect the etiology and treat accordingly.

#### Aim:

- To study the clinical patterns of periorbital melanosis
- To evaluate the dermoscopic features of periorbital melanosis.

**Materials & Methods** The study comprised 150 patients of age above 18 years with periorbital hyperpigmentation attending the Dermatology OPD of (SVMCH & RC) – a tertiary care teaching center. Detailed history was noted & clinical examination was done after getting informed written consent. Dermoscopic examination was done using a handheld 10x polarized contact dermoscope (Heine's DELTA T 20) **Results:** In our study out of 150 patients with dark circles 118 were females and 32 were males, periocular melanosis was found to be more common in females. The commonest clinical type of POH was vascular type (38.9%). Various dermoscopic patterns of periorbital hyperpigmentation like blotchy (84.6%), coarse speckled (2.7%), pigment network (12.8%) were observed in our study. Other associated skin changes like atrophy (2.7%), superficial dilated blood veins (51%), telangiectases (3.4%) were observed around the periorbital region. Periorbital melanosis was more common among women who applied eye cosmetics (77%). **Conclusion:** Periorbital melanosis is a common aesthetic concern with multifactorial etiology, dermoscopy helps in identifying the cause and helps the treating physician to offer better treatment.

**KEYWORDS :** periorbital darkening, eye cosmetics, dermoscopy, quality of life

### INTRODUCTION:

Periorbital pigmentation or dark circles is a common aesthetic facial condition encountered in dermatology practice. It is also known as periorbital hyperpigmentation or periocular melanosis, infraorbital melanosis. Periorbital hyperpigmentation is characterized by bilateral homogenous, hypochromic macules involving upper & lower eyelids, can extend towards eyebrows, malar region & lateral sides of the nasal bridge. [1] A familial component is seen in some over generations. Periocular melanosis POH is multifactorial in etiology, various factors like amount of melanin deposited in the epidermis and dermis, presence of periorbital blood vessels, genetic factors, thinning of the epidermis which in turn creates a translucent appearance leaving the deep structures visible play an important role in the pathology of periorbital darkening. [2] The skin around the eyes is physiologically thin and hence more sensitive to recurrent dermatitis (contact), blepharitis which in turn can cause post inflammatory hyperpigmentation. Dark circles can also be a marker for underlying systemic disease, nutritional deficiencies, sleep disturbance.

Dark circles has been a common aesthetic facial concern encountered in dermatology practice, in the last few years. POH is a frequent cause for low self-esteem & may hamper the quality of life of the affected individual as it makes the patient appear sad & tired.

Management of this problem is a challenge to the treating clinician as pinpointing its causes is a difficult task. Identifying the clinical and dermoscopic patterns of POH will help in better understanding of the disease and its management.

### METHODOLOGY:

This was a cross sectional study conducted in a single (tertiary care) teaching center over a period of 6 months. Using random sampling method about 150 patients of above 18 years with periorbital melanosis were selected. After obtaining informed written consent a detailed history to assess the flowing etiological factors was taken, which included duration of the condition, hours of sleep, family history, history of atopy, history of using cosmetics, history of refractive errors. History of prior use of any medications topical (eyedrops), in women menstrual history, history of using oral contraceptive pills was also elicited. Clinical examination was done to detect the involvement of upper / lower/ both eyelids and extension beyond periorbital region, visible (superficial) vasculature in the infraorbital region. Eyelid stretch test was done, stretch was given to lower eyelid and intensity of pigment was noted. Ranu et al classification was used to clinically classify types of POH among patients. [1]

Dermoscopic examination was done using handheld 10x polarized contact dermo scope (Heine's DELTA T 20), without contact fluid. Clinical photographs of patients were taken. Dermoscopic images were correlated with clinical findings. All details were entered in a pre-structured proforma. Dermoscopic images were captured and were clinically correlated with clinical findings for every patient.

### RESULTS:

In our study 150 patients with periorbital melanosis were enrolled out of which 118 were females (78.6%) and 32 were males (21.5%). Female preponderance was observed in our study. The commonest age group affected was (20-40 years). The commonest cause for POH in our study was application of eye cosmetics (77.2%, n=115) followed by people with refractive errors (20%, n=30). The etiology of dark circles is multifactorial, another cause observed among our study

population was stress associated with sleep disturbances. (18.8%,n=28).

On clinical examination various types of periorbital darkening were observed, the commonest type was found to be vascular (38.9%,n=58) followed by constitutional type (34%,n= 51),postinflammatory type (15.4%,n=23). Grading of dark circles was done according to in comparison to the surrounding skin ,Grade 2 ( 47.7 %,n= 71) was more commonly observed in our study population.

Dermoscopic examination showed more than one pattern of pigmentation around the eyes , the commonest among them was blotches (84.6%,n=126) [Figure 1] followed by pigment network (12.8%,n=19 ) and coarse speckled pattern (2.7%,n=4).Various vessel types like coils,curved,dots,lines were observed under the dermoscope ,most of our patients had line type of vessel pattern (81.2%,n=121). Reticular type (56.4,n=84) of vessel arrangement pattern was the next common pattern observed in our study.[Figure 6]

Other skin changes around periorbital region like superficial dilated veins (51%) , [Figure 2] exaggerated skin markings (43%), telangiectases (3.4%) , atrophy (2.7%) were noted .

## DISCUSSION

Periorbital melanosis being a common cosmetic concern is an ill defined entity till date. Dermoscopy helps in identifying different patterns of pigmentation of dark circles and aids in its treatment. This is a descriptive clinicoepidemiological study conducted to assess the clinical types of and dermoscopic patterns of POH. A total of 150 patients with dark circles were included in this study , in which female preponderance (78.6%) was observed.This may be due to the fact that women may be more conscious about their cosmetic appearance .The common age group affected was found to be (21-40 years).Our study correlates with the study done by Mostafa et al [ 2] where periorbital darkening was observed more commonly in women. The triggering factors observed in our study were stress related sleep disturbances, refractive errors , periorbital cosmetic application. Majority of the patients with dark circles had history of using eye cosmetics (77.2%) like kajal,mascara,eyeliner and eye shadow.Similar findings were observed in a study conducted by Sheth et al (36.5%). [3]

Patients with refractive errors (20%) had periorbital hyperpigmentation ,this finding correlates with the hypothesis proposed by Gathers that exhaustion of periorbital muscles may play a significant role in causing POH.[4] This finding correlates with the study conducted by Jage M et al where (8% )of patients with refractive errors had dark circles.[5]

In this study (18%) patients with stress and associated sleep disturbances were diagnosed with dark circles, similar data was reported in a study conducted by Ranu et al (41.5%) and by Sheth et al (40%).

In the present study 65 (43%) patients had positive family history of periorbital melanosis,this finding correlates with the study conducted by Ranu et al (42%) and by Sheth et al (63%).

In our study the commonest clinical type of periorbital melanosis was vascular type (38.9%) followed by constitutional type (34%)and postinflammatory type (15.4%). Ranu et al had reported in their study that the commonest form of POH was vascular (41%)followed by constitutional (38.6%). [1] In a similar study conducted by Jage M et al postinflammatory type ( 36%) was predominantly observed. Sheth et al reported that their study population had constitutional type of POH.[3,5]

origin of the pigment ,helps to visualise special features and patterns below the skin surface. This can assist the physician in choosing the treatment modalities according to the etiology of pigmentation.

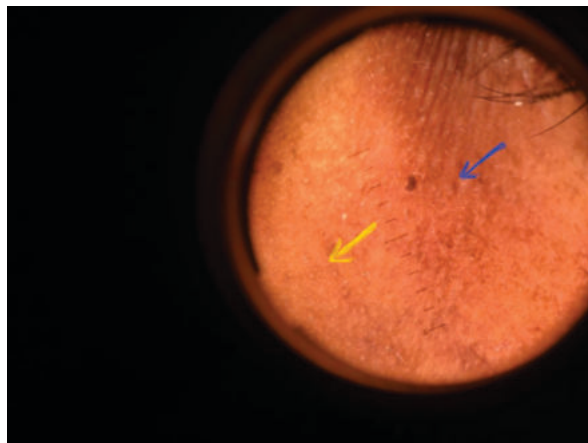
The dermoscopic patterns of pigmentation which were observed in this study were blotches (84.6%),coarse speckled (2.7%) [Figure 3] and exaggerated pigment network (12.8%),globules (2%) [Figure 4] .Similar dermoscopic patterns were observed in a previous study conducted by Jage M et al [5]. The most commonest type of dermoscopic pattern was multicomponent (64%) followed by exaggerated pigment network (42%) and blotches (30%).

Several skin changes were noticed around the periorbital region among which superficial dilated veins (51%) were present in patients with vascular type of periorbital hyperpigmentation Apart from the melanin component other findings like atrophy,exaggerated skin markings[Figure 5] were observed in dermoscopy.

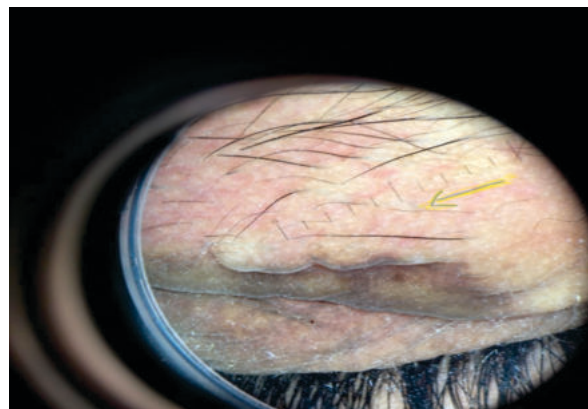
## CONCLUSION

POH is a common facial aesthetic concern with multifactorial etiology and can have a significant psychological impact on patients quality of life. Although easily diagnosed clinically, effective treatment is not possible without knowing the exact etiology.

Dermoscopy helps in identifying the relative cause of POH.As the disease demands treatment depending upon its cause, dermoscopic evaluation of POH will help in better understanding of the cause of POH and its management thereby reducing the psychological impact on patients quality of life.

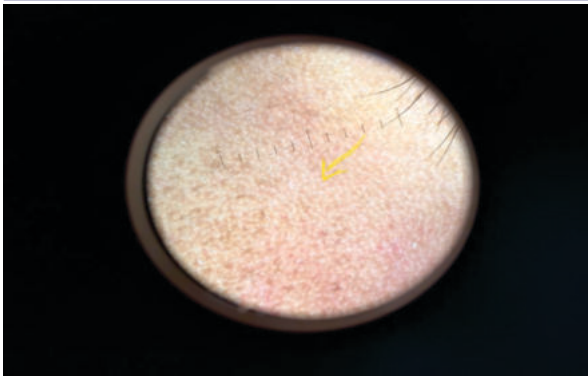


**Figure 1:** Mixed type of pigmentation of periorbital melanosis seen on dermoscopy, fine speckled type (yellow arrow), blotchy type (blue arrow)

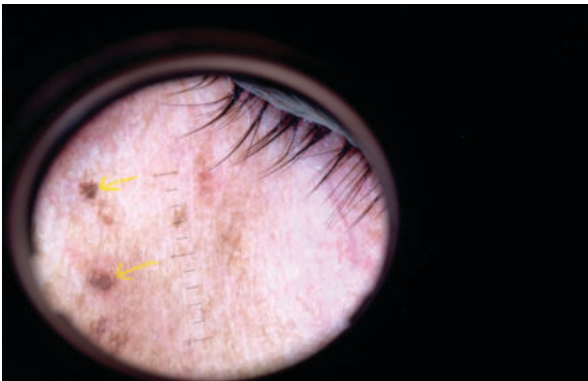


**Figure 2:** Dermoscopy showing superficial dilated veins

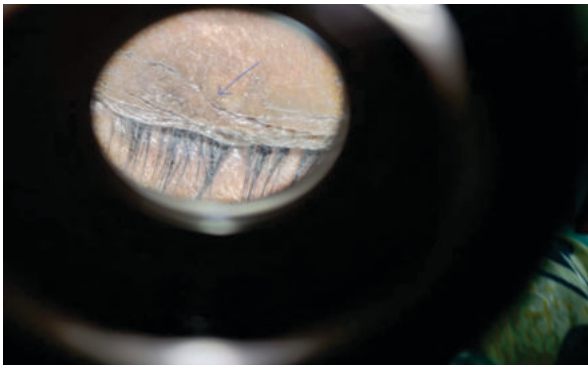
Dermoscope is a non invasive tool which helps in finding the



**Figure 3:** Epidermal pigmentation with cobblestone type of macules (coarse speckled ) with central hypopigmentation on dermoscopy



**Figure 4:** Periorbital pigmentation showing melanin globules (yellow arrow) on dermoscopy



**Figure 5:** Dermal pigmentation with exaggerated skin markings on dermoscopy



**Figure 6:** Dermoscopic picture of linear arrangement of blood vessels with globule type of pigmentation (yellow arrow)

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