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Research Article

Clinico-Epidemiological Study of Facial Hypermelanoses

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Abstract: Hypermelanoses involving predominantly the face and the neck is relatively common and often presents a complex diagnostic problem. The Objectives of this study were to study the clinico-epidemiological characteristics of facial hypermelanosis and to assess the role of various aetiological factors in the pathogenesis of facial hypermelanosis. Source of data consisted of all patients of facial hypermelanoses attending the outpatient department of Dermatology and Venereology in Bangalore Medical College Research Institute. A questionnaire was used to record the preliminary data and detailed history. Clinical examination included general physical examination and local examination of face, oral cavity and other skin appendages. Investigations were done only in relevant cases which included woods lamp examination, complete blood count and thyroid profile. Majority of patients were in age groups of 31-40 years (41%) and 21-30 years (30%). Females presented more commonly with facial hypermelanoses seen in 67% of cases. UV radiation (54%), drugs (22%) and cosmetics (22%) were the possible precipitating factors of facial hypermelanoses in our study. Melasma was the most common cause of facial hypermelanoses comprising 36% of cases, followed by Post Inflammatory Hyperpigmentation(25%). The three main predisposing factors in the development of melasma were genetic predisposition (36%), female hormones (36%) and UV radiation (28%). In conclusion, facial hypermelanosis is a clinical feature of a diverse group of disorders most common in middle aged females who expose to sunlight and having genetic predisposition. The most common of which is Melasma. Diagnosis is generally based on detailed personal, family history and clinical features aided with relevant investigations depending on individual case.
Keywords: Facial Hypermelanosis, Epidemiology, Etiology, Melasma

INTRODUCTION

Hypermelanoses involving predominantly the face and the neck is relatively common and often presents a complex diagnostic problem. Several more or less well-defined clinical syndromes can be recognized, but many transitional forms defy classification. The majority of the world's population is brown-skinned, and an enormous amount of interest worldwide is focused on restoring hyperpigmented skin to its natural color by skin care specialists.

Normal skin color is dependent on the quantity and type of melanin pigment in the melanocytes and keratinocytes. The thickness of the stratum corneum, the dermal vasoconstriction or vasodilatation and the occasional presence of endogenous or exogenous pigments may also modify the skin color. Several factors may be responsible for the numerous hyperchromatic processes affecting the epidermis and/or dermis: hereditary, endocrine, nutritional, neoplastic, inflammatory, drugs, physical and chemical.

Due to their visibility, facial and neck pigmentations (cervicofacial pigmentations) are the most cosmetically important. Here we have conducted a study with the objectives

i) To study the clinico-epidemiological characteristics of facial hypermelanosis

ii) To assess the role of various aetiological factors in the pathogenesis of facial hypermelanosis.

MATERIALS AND METHODS

All patients of facial hypermelanoses attending the outpatient department of Dermatology and Venereology in Victoria Hospital and Bowring and Lady Curzon Hospitals attached to Bangalore Medical College Research Institute were included in the study. Those patients who refused to give consent were excluded from the study.

A questionnaire was used to record the demographic details of all patients including the age of onset, duration of disease, site of onset of pigmentation, rate of progression, associated symptoms, and family

history. Information was also noted regarding any precipitating factors, use of cosmetics, drug intake prior to the onset, and associated cutaneous or systemic diseases. A detailed general physical examination was done. Signs of anemia and malnutrition were looked for. Local examination of facial pigmentation was done and a record was made of the morphology and distribution of lesions, extent of involvement, colour of pigmentation, and changes in oral cavity, hair and nails. A detailed systemic examination was also carried out. Following investigations were carried out:

- Complete blood count for detection of anaemia and to rule out systemic causes of facial hypermelanoses.
- Thyroid profile in cases of melasma and periocular melanoses.
- Wood's lamp examination to determine the depth of pigmentation in melasma cases.

RESULTS

The following observations and results were made and obtained in this cross sectional study which included 100 patients.

Age and sex wise distribution of cases

The youngest patient was a 13 year old male and the oldest was 65 year old female with a mean of 35.04 in our study. The maximum number of patients belonged to 31-40 years age group (41%), followed by 21-30 years (30%) as shown in Table 1. Of the 100 patients included in the study, 33% were males and 67% were females. Ratio of Male: Female was 1: 2.03 in the current study.

Table 1: Age and sex wise distribution

Age in years	Male		Female		Total
	No	%	No	%	No
< 20	3	9.09	4	5.97	7
21-30	12	36.36	18	26.86	30
31-40	9	27.27	32	47.76	41
41-50	5	15.15	10	14.92	15
>50	4	12.12	3	4.47	7
Total	33	100	67	100	100

Diagnosis

In our study, we came across 11 different categories of facial hypermelanoses (Fig. 1). The most common cause being melasma in 36 cases followed by post inflammatory hyperpigmentation (25%) and periocular hypermelanoses (12%). Except PIH, all other causes of facial hypermelanoses were common in females.

Etiology of Post inflammatory hyperpigmentation (PIH)

Both exogenous and endogenous inflammatory conditions resulted in PIH. Majority were due to endogenous conditions which included solar melanoses observed in 32% of cases, followed by acne (24%) and CTD like DLE & SLE seen in 12%. PIH secondary to mechanical trauma seen in 2 cases and a case of contact dermatitis were among the exogenous causes of cutaneous inflammation.

Age of onset

Overall in our study, the onset of hypermelanoses was in 3rd decade followed by 4th decade in majority of cases. All the disorders of hypermelanoses had onset before the age of 20 years except LPP & Riehl's melanoses which had after the age of 20 years and drug induced hypermelanoses after the age of 30 years. After the age of 50 years, we noticed the onset of only LPP, PIH and Riehl's melanoses. In general, melasma, PIH, periocular and Riehl's melanoses had its onset in 3rd and 4th decade of life.

Duration of symptoms

In our study, the duration of symptoms ranged from 1 month to 18 years. In 50% of the cases the symptoms were present since <1 year duration, followed by 2-5y in 34% of cases. Among the cases having less than 1 year duration, elasma (30%) and PIH (26%) were the common conditions. On an average, they sought medical treatment 3.22 years after the appearance of their symptoms.

Exacerbation of pigmentation on sun exposure

All cases of LPP, 80% cases of drug induced hypermelanoses and ephelides, 67% of cases of melasma & more than 50% cases of Riehl's, PIH and Ashy dermatoses had exacerbation of pigmentation on sun exposure.

History of Cosmetic use and Drugs

Out of 100 cases, there was history of cosmetic use in 22% of cases. In which 13 patients gave history of application of fairness creams for a mean duration of 2.6 years, followed by bleaching agents, steroid creams and ayurvedic preparations in 2% each which they had applied for <1 year. Application of fairness creams was common in melasma (8 cases) followed by ephelides(2 cases) and a case each in periocular, perioral and riehl's melanoses.

History of drug intake was seen in 22% of cases. Out of these, patients attributed their facial pigmentation to

drugs in 8 cases. Out of these 8 cases, 4 patients gave history of taking MB-MDT for lepromatous leprosy for one year duration and one patient was on MB-MDT since 2 months. Other patient was on tablet phenytoin for 17 years for epilepsy. In melasma, 4 patients gave history of taking OCP's and 3 cases were on ART but the patients did not attribute the intake of drugs as a precipitating factor for melasma. In other disorders the patients gave history of consumption of other drugs like anti-diabetic and anti-hypertensive drugs for the associated conditions.

Family history

Similar complaints in the family was seen among 13 out of 36 cases of melasma(36%), 80% of cases of Ephelides, 25% of cases of periocular melanoses.

Site Distribution

The commonest site found to be involved in our study was the cheeks in 62 cases followed by forehead in 48, nose in 37, temporal in 28, periocular in 21. Rest of the sites were involved in less than 20% of cases.

Pattern of pigmentation

Majority of the cases had localized pigmentation seen in 82% of cases. Diffuse pigmentation was observed in only 18% of cases.

All cases of Ashy Dermatoses, Drug induced hypermelanoses and Riehl's melanoses had diffuse pigmentation. Only 5 out of 20 cases of PIH had diffuse pigmentation. Rest of the disorders had localized pigmentation of face.

Colour

Grey/slate/ blue colour which indicates dermal pigmentation was seen in 61% of the cases and brown colour that is epidermal pigmentation seen in 39%.

All cases of ephelides, 67% cases of periocular melanoses, 64% cases of melasma and 12% of PIH had epidermal pigmentation. Rest of all cases had dermal pigmentation.

Pigmentation in other parts of the body

23% of the cases had pigmentation in other parts of the body including mucous membranes.

Most were due to PIH which had 40% of its cases which included solar melanoses, acne and CTD. In these cases, the pigmentation was also noticed over arms and trunk.

In melasma, periocular and perioral melanoses the pigmentation was limited to face only.

Melasma

As melasma was the common condition in our study, we studied further about its types, patterns and predisposing factors.

It had its onset and presentation in 3rd and 4th decade of life in majority of cases. We did not have any case beyond 5th decade of life. It was common in females as observed in 80.6% of the cases in comparison to 19.6% of males.

Table 2: Age and sex wise distribution of melasma cases

Age in years	Male	Female	Total
< 20	0	0	0
21-30	3	10	13
31-40	3	15	18
41-50	1	4	5
>50	0	0	0
Total	7	29	36

Predisposing factors

36% of the cases with melasma had similar complaints in family. Among 29 female cases with melasma, 44.83% of the cases developed facial pigmentation during pregnancy. Other predisposing factors are UV radiation, drugs like ART and OCP's, cosmetics like fairness creams and associated systemic diseases like hypothyroidism.

Drugs

10 out of 36 patients of melasma had history of drug intake. Out of which 4 patients were on OCP's for a mean duration of 2 years and 3 patients were on ART. 3 of the patients were on other drugs like anti-diabetic and anti-hypertensive.

Type of melasma

The most common type of melasma was centrofacial seen in 17 out of 36 cases, followed by malar (13) and mandibular (6).

Wood's lamp pattern of melasma

The most common pattern observed in our study was epidermal in 55%, followed by dermal (22%), mixed (17%) and was indeterminate in 2 cases.

DISCUSSION

Hyperpigmentation of the skin is a common complaint among patients consulting with dermatologists. The majority of the world's population is brown-skinned, and an enormous amount of interest worldwide is focused on restoring hyperpigmented skin

to its natural color by skin care specialists.

Several factors may be responsible for the numerous hyperchromatic processes affecting the epidermis and/or dermis: hereditary, endocrine, nutritional, neoplastic, inflammatory, drugs, physical and chemical.

Due to their visibility, facial and neck pigmentations (cervicofacial pigmentations) are the most cosmetically important. Thus the clinic- epidemiological features are essential. So we studied 100 patients of facial hypermelanoses to determine the various clinical features and epidemiological factors who attended outpatient Department of Dermatology at Victoria and Bowring & Lady Curzon Hospital, Bengaluru. As there is very few published literature available about the facial hypermelanoses, the clinical features and epidemiological factors are discussed in our study and compared with the literature available.

Age and sex distribution

Among the 100 patients, majority were belonged to age groups of 31-40 years of age (41%), and 21-30 years (30%). In both these age groups, females outnumbered males contributing to 32 and 18 cases respectively.

In the review article of Ana Perez *et al*. [1], it has been quoted that facial hypermelanoses is common in middle-aged women, and are related to endogenous (hormones) and exogenous factors (such as use of cosmetics and perfumes, and exposure to sun radiation) and also facial hypermelanoses causes significant cosmetic disability which may be the reason for slightly more number of female patients seeking medical advice.

Diagnosis

The most common cause for facial hypermelanoses in our study was melasma observed in 36% of cases, followed by post inflammatory hypermelanoses (25%) and periocular hypermelanoses (12%). Other causes were Riehl's melanoses (6%), ephelides and drug induced hypermelanoses 5% each, LPP (4%), perioral hypermelanoses (3%) & ashy dermatoses (2%). A case each of acanthosis nigricans and nevus of ota were also observed.

Melasma

Melasma is an acquired hypermelanoses, characterized by gray-brown symmetrical patches, mostly in the sun-exposed areas of the skin. The pathogenesis is unknown, but genetic, hormonal and UV radiations are important predisposing factors. 36% of cases in our study comprised melasma. The average age of patients in our study was 33.77 years ranging from 24 to 48 years which was in accordance with the study conducted by Arun Achar *et al*. [2] where the mean age was 33.45 years. The common age group affected in melasma was 31-40 seen in 50%, followed by 21-30 in 36% of cases. Females comprised the majority of cases seen in 29 out of 36 cases and the common age group affected was 31-40(15). A positive family history was observed in 36.11% in the present study, which was in concordance with an earlier reported study, in which it varied from 20 to 70% [3, 4.

According to the distribution of the lesions we recognized three clinical patterns which were centrofacial, malar and mandibular. Among these, centrofacial was the most common, like other studies from India and abroad [5, 6]. Under the Wood's light examination, we found that the epidermal type was the most common, in accordance to an earlier study [7].

Post inflammatory hypermelanoses

Second most common cause (25%) of facial hypermelanoses in our study is post inflammatory hypermelanoses which represents the sequelae of various cutaneous disorders and interventions which include infections, reactions to medications, phototoxic eruptions, CTD, trauma and inflammatory diseases. The patients were in the age range of 13 to 65 years with a mean of 34.96 years. It was observed more commonly in males in 42.42% as compared to females (16.41%) which is in contrary to the quote made by Nicole *et al*. [8] in his review that, PIH occurred with equal incidence in both sexes. In majority of the cases (80%) the pigmentation was localised to the preceding inflammatory condition with colour ranging from light brown to black. Diagnosis of PIH was made based on the history of a preceding inflammatory process in the affected area of hyperpigmentation.

Periocular hypermelanoses

POH present with a dark area surrounding the eyelids. It is an ill-defined condition, and the pathogenesis can be multifactorial. In our study, POH constituted 12% of cases of facial hypermelanoses. Out of 12 cases, 4(33.33%) were males and 8(66.66%) females and the mean age was 34 (range 18-45). However the study conducted by Harneet Ranu *et al*. [9] in Singapore observed male preponderance (62.6%) and mean age of 26.4 years which was in contrary to our study probably due to geographic and racial differences. In our study, we observed deprivation of sleep in 7 cases (58.33%), positive family history of POH in 3 cases (25%), history of atopy in 2 cases (16.66%). Harneet Ranu *et al*. [9] also observed in her study that 51.1% of cases had sleep deprivation but a higher percentage of history of atopy (55.4%) and family history (42.2%). We also noted that 3(25%) patients had anaemia and 2(16.66%) cases had hypothyroidism.

Riehl's melanoses

In our study, riehl's melanoses were observed in 6% of cases. The mean age was 40.16 (range 28-53) and more common in females observed in 83.33% of cases. All the cases had history of cosmetic use for a mean

duration of 5 years and the various cosmetic used were fairness creams, hair dye and steroid creams. Rorsman H [10] also stated that the commonest cause was sensitizing chemicals in cosmetics. Pruritus was observed in 2 cases (33.33%). The lesions were more pronounced over forehead, temporal and cheeks.

Drug induced hypermelanoses

Drug-induced pigmentation represents 10 to 20% of all cases of acquired hyperpigmentation and this hypothesis must be systematically raised in unexplained pigmented lesions especially in elderly people [11].

In our study, we observed 5 cases of drug induced skin pigmentation. The mean age was 40.6(range 35-45) and majority of patients were females (80%). History of exacerbation of pigmentation on sun exposure was seen in 4 cases (80%). All the patients in our study had diffuse pigmentation prominent on sun exposed areas and the pigmentation varied from black to violaceous-brown shades. Pigmentation was also observed in other parts of the body like extremities, trunk and mucous membrane. The common drugs implicated in our study were MB-MDT for lepromatous leprosy in 4 cases (80%) who had generalized violaceous brown pigmentation probably due to clofazamine. A case of phenytion induced pigmentation was observed after 17 years of drug intake.

Lichen planus pigmentosus

LPP is a common pigmentary disorder seen in the Indian population having distinct clinical and epidemiological characteristics.

LPP constituted 4% of patients in our study. Bhutani *et al*. [12] also reported 4.1% incidence of LPP in his study.

It generally starts in the third to sixth decade of life. Earlier studies conducted by Bhutani *et al*. [12] & Vega *et al*. [13] have also reported its occurrence at a similar age group in their patients.

In our study the distribution of cases was equal among males and females. While Vega *et al*. [13] reported female preponderance, Bhutani *et al*. [12] observed no difference in sex distribution in their patients.

In our study, pigmentation in different patients varied from slate grey to brownish-black, although in a single patient it was generally uniform.

The forehead, temples and nose was the predominant sites involved in our study observed in almost all patients. Bhutani *et al*. [12] and Vega *et al*. [13] also noted similar findings in their patients.

Although lesions are generally asymptomatic, mild pruritus and photosensitivity were present in 75% of patients. In earlier reported series, pruritus was present in 50% to 62% of the patients [12, 13].

We did not observe association of LPP with lesions of LP, while Bhutani *et al*. [12] and Vega *et al*. [13] observed lesions of LP in 11/40 (27%) and 1/11(9%) of their patients, respectively. This difference may be due to fewer cases studied.

CONCLUSION

Facial hypermelanosis is a clinical feature of a diverse group of disorders most common in middle aged females who expose to sunlight and having genetic predisposition. The most common of which is Melasma. There is considerable overlap in clinical features amongst the clinical entities of facial hypermelanoses. Etiology in most of facial hypermelanoses is unknown, but some factors such as UV radiation in melasma, sleep deprivation in periocular hypermelanoses and exposure to allergens in Riehl's melanosis could be implicated. Diagnosis is generally based on detailed personal, family history and clinical features aided with relevant investigations depending on individual case. The treatment of facial hyperpigmentation is still challenging. It is important to have a comprehensive understanding and information on the clinico-epidemiological and etiological factors of various clinical entities of facial hyperpigmentation for better management of patients.

REFERENCES

1. Pérez-Bernal A, Miguel A. Muñoz-Pérez and Francisco Camacho; Management of facial hyperpigmentation. Am J Clin Dermatol., 2000; 1(5): 261-268.
2. Achar A, Rathi SK; Melasma: A clinico-epidemiological study of 312 cases. Indian J Dermatol., 2011; 56(4): 380-382.
3. Vázquez M, Maldonado H, Benmamán C, Sánchez JL; Melasma in men: a clinical and histologic study. Int J Dermatol., 1988; 27(1): 25–27.
4. Renick *S;* Melasma induced by oral contraceptive drugs. J **Am** Med Assoc., 1967; 199(9): 601-605.
5. Katsambas A, Antoniou C; Melasma: classification and treatment. J Eur Acad Dermatol Venereol., 1995; 4: 217–223.
6. Thappa DM; Melasma (chloasma): A review with current treatment options. Indian J Dermatol., 2004; 49(4): 165-176.
7. Nicolaidou E, Antoniou C, Katsambas AD; Origin, clinical presentation, and diagnoses of facial hypermelanoses. Dermatol Clin., 2007; 25(3): 321-326.
8. Lacz NL, Vafaie J, Kihiczak NI, Schwartz RA; Postinflammatory hyperpigmentation: a common but troubling condition. International Journal of Dermatology, 2004; 43(5): 362-365.
9. Ranu H, Thng S, Goh BK, Burger A, Goh CL; Periorbital hyperpigmentation in Asians: an

epidemiologic study and a proposed classification. Dermatol Surg., 2011; 37(9): 1297-1303.
10. Rorsman H; Riehl's melanoses. Int J Dermatol., 1982; 21(2): 75-78.
11. Stratigos AJ, Katsambas AD; Optimal management of recalcitrant disorders of hyperpigmentation in dark skinned patients. Ann J Clin Dermatol., 2004; 5(3): 166-168.
12. Bhutani LK, Bedi TR, Pandhi RK, Nayak NC; Lichen planus pigmentosus. Dermatologica, 1974; 149(1): 43-50.
13. Vega ME, Waxtein L, Arenas R, Hojyo T, Dominguez-Soto L; Ashy dermatosis and lichen planus pigmentosus: a clinicopathologic study of 31 cases. Int J Dermatol., 1992; 31(2): 90-94.