Idiopathic Cutaneous Hyperchromia at the Orbital Region or Periorbital Hyperpigmentation

Idiopathic cutaneous hyperchromia of the orbital region (ICHOR), also referred to as periorbital hyperpigmentation, periorbital melanosis, dark circles or infraorbital pigmentation, is more frequently observed in dark skinned patients, especially Asians, but finds little data in scientific literature.[1] As the authors of the study on ICHOR in this issue point out, orbital hyperchromia can broadly be divided into primary and secondary types, of which ICHOR falls into the primary type, characterized by bilateral darkening of the orbital skin and eyelid, which is not secondary to systemic or local diseases.[2] The second or secondary type or periorbital hyperpigmentation (POH) has a multifactorial pathogenesis including genetic or constitutional pigmentation, excessive pigmentation akin to dermal melanocytosis, post inflammatory hyperpigmentation secondary to atopic and allergic contact dermatitis; periorbital edema; excessive subcutaneous vascularity, shadowing due to skin laxity and tear trough associated with aging.[3] Excessive sun exposure, drugs, hormonal causes and extension of pigmentary demarcation lines especially in Indian patients have also been considered to be contributory.[4] Whatever the cause, it is difficult to distinguish the cause clinically, and would need careful elimination by history and investigations to label the condition as ICHOR. Due to the transitory nature of this condition, there is no data present on the frequency or prevalence of dark circles. In an American study, Gupta had evaluated the prevalence of dissatisfaction with skin appearance of 32 women with eating disorder, compared with 34 healthy controls and found that 9% of those below 30 years of age were not satisfied with their under eye dark circles against 38% women with eating disorders.[5] This just gives us an estimate of the frequency of this disorder. Although a cosmetic problem, the tired, unhappy, and sagging appearance of the face may influence the quality of life of the individual. Treatment would probably require a multidisciplinary approach of both the dermatologist and plastic surgeon.

ICHOR or periorbital hyperpigmentation is also considered to have a genetic basis. Many authors including Goodman and Belcher reported many families with pigmentation around the periorbital area in several members of a family. Some were mildly affected and some severely affected.[6] This is something that we feel also occurs in Indian patients. However, surprisingly the present study did not show significant correlation between prevalence of ICHOR with family history, atopic and contact dermatitis, coexisting melasma or hormonal factors, although it confirmed sun exposure to be a risk factor for the same. Regarding the localization of the pigmentation, earlier studies by Watanabe *et al.* and Malakar *et al.* have examined skin biopsies from the lesions and found the presence of dermal melanocytosis and melanin pigment in upper dermal macrophages respectively in their studies, hence partially explaining the recalcitrance of this condition to several treatments.[4,6] In the current study, Verschoore *et al.* go a step further and for the first time, used an objective and non-invasive method, using a new device Siascope, which is based on the unique combination of dermatoscopy, contact remittance spectrometry, and hyperspectral imaging, to measure the concentration and distribution of total melanin, dermal melanin and oxyhaemoglobin between ICHOR skin and normal skin of the same patient. They confirm that not only melanin deposits but even blood stasis may play a role in the pathogenesis of ICHOR. They also emphasize that Siascopy is a reliable and useful diagnostic tool for ICHOR.[2]

In a recent study by Ranu *et al.*, on 200 patients of periorbital hyperpigmentation from Singapore, the possible causes were delineated according to a detailed

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history, clinical examination, assessment by three dermatologists by measuring with a mexameter.[7] They found the commonest form to be the vascular type (41.8%), characterized by presence of erythema predominantly involving the inner aspect of the lower eyelids, with prominent capillaries or telangiectasia or the presence of bluish discoloration of the lower eyelid due to visible blue veins, which became more prominent when the overlying skin is stretched. This reiterated the vascular component in ICHOR mentioned in Verschoore *et al.*'s study. The next commonest (38.6%) was constitutional, which was characterized by the presence of a curved band of brownish to black hyperpigmentation of the lower eyelid skin along the shape of the orbital rim with velvety texture, often involving the upper eyelids. The next commonest were post inflammatory hyperpigmentation (12%) and shadow effects (11.4%) due to an overhanging tarsal muscle, eyebags, or a deep tear trough. The rest were due to other causes like skin laxity, dry skin, hormonal disturbances, nutritional deficiencies, and other chronic illnesses. The presence of a predominant vascular factor in these Chinese patients besides the pigmentary factor may explain the mild response of this condition to skin lightening creams. Chemical peels, IPL, and Q-switched ruby laser, autologous fat transplantation, combinations of fat grafting and blepharoplasties as well as fillers have all been tried for treatment but none have provided a satisfactory treatment.

Hence, more studies on the prevalence and etiology of ICHOR or periorbital hyperpigmentation, would go a long way in treating and improving the quality of life in the affected patients. The above two recent Asian studies have provided us with useful information for future research.

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