

Original Article

Pigmentary skin disorders in black Africans of Sierra Leon

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Abstract *Background* Eighty percent of the world's population consists of individuals with pigmented skin. Darker skin differs from Caucasian skin in its reactivity and disease presentation.

Objective The purpose of the study was to see the prevalence of disorders of pigmentation in black Africans of eastern province of Sierra Leone and to compare the differences with other ethnic populations.

Patients and methods The study was carried out in eastern province (Kenema) of Sierra Leone from Nov, 2004 to Oct, 2005. It was an observational/descriptive study. Local black patients of all age groups presenting in dermatology out patient department of Pak Field Hospital (established as a part of UN peacekeeping mission in Sierra Leone) were included. After clinical history & physical examination, laboratory investigations were carried out when indicated. Skin diseases were broadly classified into two major categories i.e. pigmentary and non pigmentary. Non-black settlers in the area and UN troops were not included in the study. Data was recorded & analyzed by Microsoft Excel.

Results A total of 3011 patients belonging to different local tribes having a variety of skin disorders were seen during the study period. Patients were of all ages & both sexes ranging from 1 month to 73 years of age. Sex ratio was almost equal. The pigmentary skin disorders were seen in 228 (7.6%) patients and most prevalent disorders were post inflammatory hyper and hypopigmentation, followed by melasma, vitiligo and albinism.

Conclusion Pigmentary disorders in blacks are not infrequent and can be of significant concern.

Key words

Disorders of pigmentation, ethnic dermatoses, dyspigmentation, Africans.

Introduction

People with skin of color constitute a wide range of racial and ethnic groups including Africans, African Americans, African

Caribbeans, Chinese and Japanese, Hispanics and certain groups of fair-skinned persons (e.g. Indians, Pakistanis, Arabs).¹ "Ethnic skin" may be defined as non-Caucasian darker skin types IV, V and VI.^{1,2} The Skin Phototype (SPT) system, developed by Fitzpatrick, is predicated on the reactions or vulnerability of various types of skin to sunlight and ultraviolet radiation (UVR).² It is widely accepted in the dermatologic community that an

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individual with an olive skin tone, also characterized as beige or lightly tanned, is classified as having type IV skin; those with brown skin as type V; and black skin as type VI. These skin types rarely or never burn on sun exposure and tan readily. Skin color is determined by cells called melanocytes. It is well-established that there are no racial differences in the number of melanocytes.^{3,4} There are more and larger melanosomes in darker-skin melanocytes than in those of lighter skin. Racial and ethnic differences in skin color are due to variations in the number, size, and aggregation of the melanosomes within the melanocyte and keratinocyte.³⁻⁶ In addition to differences in the grouping of the melanosomes, an increased number of basal layer melanosomes (340 per basal cell) has been reported in dark-skinned black subjects compared with the light-skinned black subjects (120 melanosomes per basal cell).^{7,8}

Pigmentary disorders constitute an important group of conditions that are extremely common in blacks, Hispanics, and Asians. These disorders can be psychologically distressing because of their visible nature.^{9,10} Two very common pigmentary disorders in blacks are postinflammatory hyperpigmentation and hypopigmentation. Postinflammatory hyperpigmentation is a common sequel of many inflammatory dermatoses; especially papulosquamous and vesicobullous type. Inflammatory diseases that may lead to postinflammatory hypopigmentation include pityriasis alba, atopic dermatitis, irritant and allergic contact dermatitis, sarcoidosis, lichen striatus, secondary syphilis, tinea versicolor, diaper dermatitis, and discoid lupus.¹¹ Melasma is another pigmentary disorder that occurs

frequently in people with skin of color. Clinically it presents as areas of hyperpigmentation ranging from light-brown/gray to dark-brown/gray macules and patches usually in a symmetric pattern.^{12,13} Vitiligo is a condition in which pigment cells are destroyed and irregular white patches result. The exact cause is unknown, but it is thought to be an autoimmune disorder. The extent of color loss differs with each person. There is no way to predict how much pigment will be lost. Although rare, people may lose pigment over their entire body. Most patients with vitiligo do not regain skin color without treatment.¹⁰ Pityriasis alba is another condition presenting as hypopigmentation in dark skinned people, in which there are round, light patches of skin covered with fine scales, most noticeable on the face and upper arms, most commonly found in children. The white patches are the result of mild eczema and the loss of color is only temporary. Dry skin is a problem for individuals of all skin colors, but may be especially distressing to people with darker skin tones. It is uncomfortable and is easily noticed in people with darker skin because of its grayish, "ashy" appearance. Ashiness also can affect the scalp.^{10,11} The purpose of the study was to see the frequency of pigmentary skin diseases in the Eastern province of Sierra Leone and to observe the underlying factors in causation of these disorders. Sierra Leone is located at western corner of Africa along costal line of Atlantic ocean.

Patients and methods

Local black patients of all age groups presenting in dermatology out patient

department of Pak Field Hospital (established as a part of UN peacekeeping mission in Sierra Leone) were included in the study. Clinical history and physical examination was carried out in all cases. On the basis of history and clinical examination a clinical diagnosis was made in each case and it was aided/confirmed by laboratory investigations when indicated. Skin diseases were broadly classified into two major categories i.e. pigmentary and non-pigmentary (all others). Pigmentary disorders were further divided in two categories; disorders of hyperpigmentation and disorders of hypopigmentation. These pigmentary disorders were studied and recorded in more detail as regard their possible etiologies in blacks. For academic purpose, some of physiological pigmentary findings peculiar to dark-skinned people were also recorded. Non-black settlers in the area and UN troops were not included in the study. Data was recorded & analyzed by Microsoft Excel program.

Results

A total of 3011 patients belonging to different local tribes having a variety of skin disorders were seen during the study period. Patients were of all ages and both sexes ranging from 1 month to 73 years of age. Sex ratio was almost equal. Vast majority of the patients belonged to very low socioeconomic group. The pigmentary skin disorders were seen in 228 (7.6%) patients and most prevalent disorders were post-inflammatory hyper- and hypopigmentation, followed by melasma, vitiligo and pityriasis alba. Other less common disorders were freckles, albinism, cultural tattoos, fixed drug eruptions, mucosal pigmentations,



Figure 1 Postinflammatory hyperpigmentation. A case of onchodermatitis.



Figure 2 A case of melasma.

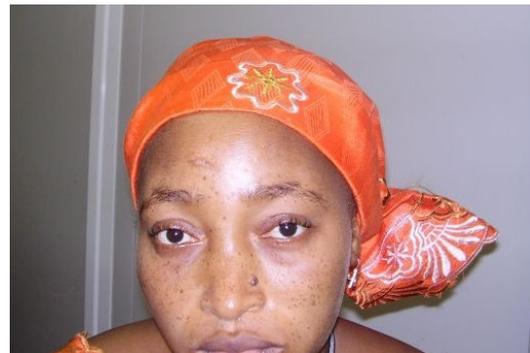


Figure 3 Freckles on the face in an African woman.

dermatosis papulosa nigra and idiopathic guttate hypomelanosis. Physiologically occurring pigmentary demarcation lines and

Table 1 Composition of pigmentary disorders in Black Africans.

No.	Disorders of pigmentation	Composition
1	Hyperpigmentation n = 177	Postinflammatory hyperpigmentation (n=85) Racial pigmentation (pigmentary demarcation lines, linea nigra) (n=32) Melasma (n=21) Cultural (tattooing, medicinal) [n=13] Miscellaneous (fixed drug eruption, carotenemia) [n=12] Idiopathic (mucosal) [n=6] Freckles (n=5) Dermatosis papulosa nigra (n=3)
2	Hypopigmentation n = 51	Post inflammatory hypopigmentation (n=23) Pityriasis alba (n=12) Vitiligo (n=9) Albinism (n=5) Idiopathic guttate hypomelanosis (n=2)



Figure 4 Albinism (causing photophobia).



Figure 6 Pigmentary demarcation lines (physiological).



Figure 5 Carotenoderma due to excessive use of local oranges and vegetables.



Figure 7 Dermatosis papulosa nigra in blacks.

linea nigra were also frequently seen. The frequency of disorders of hyperpigmentation

and hypopigmentation along with the composition of each category is shown in **Table 1**. Some of the disorders seen are

shown in **Figures 1-7**.

Discussion

Skin pigmentation and dyschromias are often key skin concerns for patients of color.^{9,10} Although melanin confers a protection from UV radiation, pigmented skin can also experience significant photodamage, manifested by epidermal atypia and atrophy, dermal collagen and elastin damage, and marked hyperpigmentation.¹⁴ In an analysis of 2000 black patients, Halder *et al.*¹⁵ found that the third most common diagnosis was pigmentation disorders other than vitiligo. Pigmentary disorders were 3rd or 4th most frequent disorders in some other studies.^{1,12,15} We also found these disorders most common after skin infections and hair and scalp disorders in our study, though the percentage (7.6%) was little less as compared to the previous studies in black population (9%).^{1,15} However, when compared with studies in Asians and Hispanics the frequency was considerably high.^{1,16,17} Most patients presented with postinflammatory hyperpigmentation and it can be considered the default pathophysiologic response to cutaneous injury in people with skin of color. This response is predictable due to the labile response of melanocytes to irritation or inflammation.^{12,15} The actual pathogenesis of postinflammatory hyperpigmentation and hypopigmentation remains unknown. However, normal biologic phenomena, specifically the release of inflammatory mediators and cytokines from inflammatory cells, as well as epidermal cells and melanocytes, most likely play a role¹⁸. Leukotriene B₄, prostaglandins D₂ and E₂,

endothelins, interleukins 1 and 6, and tumor necrosis factor- α have been reported to increase melanogenesis. A decrease in melanogenesis may be caused by leukotriene C₄. Particular cytokines and leukotrienes, such as leukotriene C₄ and transforming growth factor- α , cause movement of melanocytes.^{18,19} Recent research has also revealed the important role of the protease-activated receptor 2 (PAR-2) pathway in pigmentation.²⁰ Postinflammatory hypopigmentation is another common complication seen in ethnic skin from numerous inflammatory diseases. Seborrheic dermatitis is one of the most common diseases to present as postinflammatory hypopigmentation in African Americans.²¹ Melasma, an acquired hypermelanosis of sun-exposed areas, particularly involves the face. Although the exact cause of melasma is unknown, many factors have been linked to its pathogenesis, such as genetics, UV radiation exposure, pregnancy, hormonal treatments, cosmetics, and phototoxic and anti-seizure medications. Melasma has a higher prevalence in both male and female Ethiopians, as well as in Hispanics and African Americans.^{12,13,22} Vitiligo is another pigmentary disorder of major concern in ethnic populations. The well-circumscribed depigmented macules are more visible in individuals with darker skin and cause significant cosmetic and psychological concerns in darker-skinned individuals.¹⁰ The prevalence of pigmentation disorders in black subjects has resulted in their use of many topical products that are not always prescribed or monitored by physicians. These cultural practices can result in further pigmentary disorders (hyperpigmentation or hypopigmentation).^{12,23} Some of the

pigmentary disorders seen in our study; like body tattooing, genital tattooing, female genital pigmentation (post-circumcisional), post-medicinal pigmentation and carotenemia were clearly the result of social and cultural taboos, rituals, and dietary habits.^{12,24-27} We also noted, just for an academic purpose, some physiological pigmentary landmarks in blacks, like pigmentary demarcation lines and linea nigra along with peculiar dermatosis called dermatosis papulosa nigra.²⁸⁻³⁰

Conclusion

Disorders of skin colour are quite frequent in black Africans and these are not just a trivial colour change but can be of significant psychosocial concern.

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