

Topical Steroid Abuse: Its Use as a Depigmenting Agent

Edith Nnoruka, MBBS, Msc ClinDerm (Lond), FMCP and Obiefuna Okoye, MBBS
Enugu, Nigeria and New Orleans, Louisiana

This study was undertaken to document prevalence, motives and observed complications of steroid use as a depigmenting agent amongst African blacks in southeast Nigeria. This practice is very common in the African environment. Consecutive new patients attending the dermatology clinic of the University of Nigeria Teaching Hospital, Enugu, from June to December 2004 were recruited. Active substances of products used were determined from packages, while unknown concoctions were analyzed. Chi-squared and Fischer tests were used for statistical analysis, with a significant threshold fixed at 5%.

Females aged 18–69 years accounted for 75% (414) of patients. Main topical steroids used by both women and men were class-1 steroids, and these were often compounded with other bleaching products. Median duration of usage was 9 years \pm 1.3. Disorders observed included steroid-induced acne (45.3%), macular hyperpigmentation of face (37.2%), mycoses (40.4%), striae (28.3%), telangiectasis (21.3%), hypertrichosis (13.9%) and diabetes mellitus (2.1%). Duration of utilization of these topical steroids was significantly associated with severe local and systemic consequences, while withdrawal of the offending steroids usually resulted in severe withdrawal dermatitis that was unpleasant to patients. This may suggest that discontinuation is impossible.

Key words: corticosteroids ■ cosmetic practices ■ topical steroids ■ tinea incognito ■ diabetes mellitus

INTRODUCTION

In the African setting, cosmetic usage for the dark skinned is chiefly directed toward attempting to change one's skin color, and this has been a long-standing practice. Skin lightening or skin toning creams exist in Africa, and products produced for other purposes are used to lighten the skin, e.g., steroids.

Steroids are anti-inflammatory agents used for the treatment of steroid responsive skin disorders.¹ Treatment of skin diseases was revolutionized with the advent of these anti-inflammatory corticosteroids. However, their use as skin lighteners is widespread, and complications arising from them have not been extensively documented in our environment in comparison to well-described complications from prolonged usage of hydroquinone leading to exogenous ochronosis² and nephrotic syndrome secondary to mercurial.³

Topical steroids are divided into four groups according to their potency in keeping with the British National Formulary (BNF), while the American system classifies them into seven classes, with class 1 corresponding to the very potent, superpotent or ultrahigh potency. Class-1 topical steroids are very potent, e.g., clobetasol propionate,¹ and local side effects are most commonly seen with prolonged usage (>3 weeks), particularly on areas of skin such as the face or flexures. Resulting complications are multiple: perioral acne; masking of infections, particularly dermatophyte infections⁴ as well as adrenal suppression.⁵ These are well documented among African and Afro-Caribbean communities in the western world.⁶

On the contrary, topical steroids are readily obtained over the counter without a doctor's prescription in most African countries, including Nigeria⁷, despite its being banned by the Federal Ministry of Health. In most instances, they are used for the side effect of depigmentation in conditions such as melasma, cosmetic ochronosis, acne vulgaris and postinflammatory hyperpigmentation, and in several instances for cosmetic practices as a depigmenting

© 2006. From the Subdepartment of Dermatology, College of Medicine, University of Nigeria Teaching Hospital, Enugu, Nigeria (Nnoruka) and School of Public Health and Tropical Medicine, Tulane University, New Orleans, LA (Okoye). Send correspondence and reprint requests for *J Natl Med Assoc.* 2006;98:934–939 to: Dr. Edith Nnoruka, Subdepartment of Dermatology, College of Medicine, University of Nigeria Teaching Hospital, Enugu, 400001, Nigeria; phone: 234 42 452549; e-mail: nkechi_nnoruka@yahoo.com

agent in combination with hydroquinone. Furthermore, the abuse of topical steroids is worsened when some general practitioners prescribe topical steroids for all skin rashes and for protracted periods.

This study was therefore taken up to document the prevalence of steroid usage as a depigmenting agent in our environment, the motives for such practices and commonly used steroids as well as to document observed complications.

METHODOLOGY

Inclusion Criteria

A cross-sectional descriptive study was conducted between June and December 2004 on all consecutive new patients attending the dermatology clinic of the University of Nigeria Teaching Hospital, Enugu, for dermatological problems. All patients were adults, and both males and females were recruited if their cosmetic practices entailed the use of depigmenting agents.

The depigmenting agents utilized were ascertained by asking the patients to come back with packets or containers of used products from which well-known active lightening substances, hydroquinone, mercurial or steroids were obtained.

DATA COLLECTION

A questionnaire on preferred cosmetic practices was administered for data collection after obtaining patients' informed consent. Information extracted apart from demographic data, such as age, sex and occupation, included the names and types of products used in the last three months; duration of such practice; frequency of application and areas of the body involved; quantity utilized monthly and their estimated cost; and, finally, if the patients had any other medical problems such as hypertension, diabetes mellitus or renal disorders, and the duration of such medical problems.

Skin/Medical Examination

Documentation of presenting complaint and clinical examination of affected areas, pattern of lesions and any concomitant medical problems were carried out. Relevant laboratory tests, such as mycological studies, venereal disease research laboratory (VDRL), blood urea electrolytes, creatinine, urinalysis or skin biopsy, were carried out when diagnosis and physical examination were not particularly clear.

DATA ANALYSIS

Chi-squared and Fischer tests were used for statistical analysis, with a significant threshold fixed at 5%.

RESULTS

There were 547 (58.7%) patients utilizing depigmenting agents who met the criteria for the study,

Table 1. Demographic features of patients utilizing topical steroids (n=547)

	Frequency	Percentage(%)
Age		
18-28	131	23.9%
29-39	223	40.8%
40-50	118	21.6%
51-61	69	12.6%
62-72	6	1.1%
≥73	0	0
Total	547	100
Age range (years) 18-71		
Mean (years) 29.0 ± 11.8		
Occupation		
Businessmen/-women	119	21.8%
Civil servants	91	16.6%
Housewives	103	18.8%
Students	110	20.1%
Traders	124	22.7%
Total	547	100

Figure 1.

A. Postinflammatory hyperpigmented papules alongside macular hyperpigmentation of the forehead and malar area



B. Tiny clusters of papules, pustules (steroid-induced acne) scattered over entire face



out of the 931 consecutive new patients recruited for the study. Of these, 414 (75.7%) were females and 133 (24.3%) were males, with ages ranging 18–71 years and mean of 29.0 ± 11.8 years (Table 1). Traders (22.7%) accounted for the most affected, followed by businessmen and -women (21.8%). The duration of such practice varied from three months to 30 years with a mean duration of 5 ± 1.3 years.

Products Utilized

Topical steroids were utilized by 313 (57.2%) patients for cosmetic purposes as depigmenting agents. Of these, 32 (5.9%) individuals indicated they were using them as medication for various dermatological conditions such as eczemas, papulosquamous disorders, sycosis barbae and connective tissue disorders. There were >21 different steroid-containing products utilized, mostly class-1 steroid in 89.6% of cases (Table 2). These products included Topifram®, Topicort®, Topgel®, Topsyn®, Movate®, Dermovate®, Diprosone®, Visible Difference®, Betadine®, BioClaire®, Betnovate-N®, Neomedrol®, Synalar®, Locacorten®, Palmar’s Spot Remover®, Top Clear

Skin®, Betnovate C®, Neutone®, etc. Other commonly utilized depigmenting agents included hydroquinone in 239 (43.7%), mercurial in 37 (6.8%), kojic acid in 11 (2.1%), alphahydroxy acids/glycolic acids in nine (1.6%) and unknown products in 31 (5.7%) cases. These products were used in combination with steroids in 61.3% of cases.

All steroids as well as other depigmenting agents were purchased from nonmedical stores, cosmetic shops and even open markets. With the exception of a few steroid-based compounds having a pharmaceutical presentation, such as Betnovate-N, Dermovate and Topifram, most had pure cosmetic presentations on their packages without warnings about adverse effects and contraindications. They were manufactured in various parts of the world (Europe, North America, Far East and Middle East).

Modes of Application

These products were applied all over the body in 81.3% of cases, while 18.7% applied them directly to the face only. Products were applied twice daily. Even pregnant females carried on with application of topical steroids right through pregnancy and during lactation. Among the males, 79 (14.4%) applied these topical steroids mostly to the face for acne vulgaris and pseudofolliculitis barbae. The quantity of products utilized per month varied from 2–5 tubes of 30 g of very potent steroids (class-1 steroids).

Presenting Complaint

Motives for hospital visits to the skin clinic were, chiefly, patchy darkening of the face. This was the chief presenting complaint in 201 (36.7%) cases, followed by widespread itchiness/irritation of the body or face/± the intertriginous areas in 147 (26.9%), bizarre rashes in 138 (25.2), while 61 (11.2%) had multiple complaints.

Skin disorders documented during dermatologic/

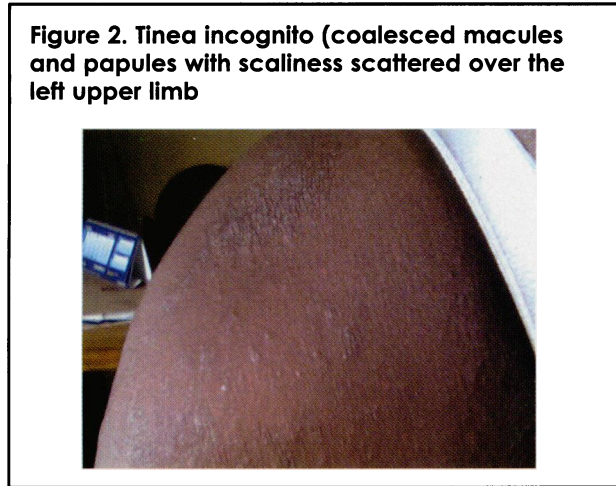


Table 2. Steroids frequently utilized (n=547)

Branded Steroids Used	Class of Steroids Used	Number of Users	Percentage (%)
Dermovate, Termovate, Movate Nerisone, Top Clear, Nuvotone	I (very potent)	273	49.9
Betnovate, Diprisone, Betina, Topifram, Topicort, Topgel	II (potent)	198	35.3
Eumovate, bethamethasone valerate, Nemedrol, triamcinalone, synalar	III (moderate)	64	11.7
Hydrocortisone, aclovate	IV (mild)	17	3.1

** Reflects classification of steroids in keeping with the BNF (British National Formulary), which employs a four-point scale: mild, moderate, potent and very potent, while the United States ranks topical steroids as class 1 (super potent) to class 7 (mild) (Burns T, Breathnach S, Cox N, Griffiths C. Rook’s Text Book of Dermatology, vol. 4, 2004, 7th ed.; 75.16.) *** Some patients used >1 topical steroid at a time.

systemic examination included widespread dermatophyte infections with lesions that were often atypical appearing, and diagnosis was frequently delayed or missed (tinea incognito, Figure 2). These were found on various parts of the body in 191 (34.9%) individuals. Macular hyperpigmentation of the face occurred in 204 (37.3%) cases (Figure 1A). Acne vulgaris occurred in 248 (45.3%) cases, and these were seriously inflamed with huge pustules and micropapular eruption over the entire face (Figure 1B).

Pityriasis versicolor was also widespread and located in unusual sites such as the medial aspects of both upper and lower limbs in 31 (5.7%) patients. These were deeply depigmented and associated with superficial atrophy. Of these, three patients also had associated diabetes mellitus, which was of recent onset. Other disorders/complications noted were widespread striae in 161 (28.3%) cases (Figure 3A and B), telangiectasia in 117 (21.3%); easy bruisability was noted in 95 (17.4%) and hypertrichosis in 73 (13.3%) cases.

Associated Medical Conditions

Diabetes mellitus was documented in 11 (2.1%) patients, while hypertension and obesity were observed in nine (1.6%) patients. Renal insufficiency was not observed among any of these patients. Patients who had developed diabetes mellitus and hypertension had all used bleaching products, particularly steroids, for ≥ 13 years. Correlation of these medical conditions and use of steroids revealed that class-1 steroids were more significantly associated with development of diabetes mellitus, obesity and hypertension than other depigmenting agents ($p < 0.05$). Figures 4 and 5 reflect the relationship between continuous use of very potent steroids and development of systemic complications, particularly diabetes mellitus. Duration of use and quantity of

steroids used were also significantly associated more with the development of diabetes than of hypertension ($p < 0.005$).

DISCUSSION

Use of steroids as a depigmenting agent has become quite common in our environment. In a representative sample of adults visiting our dermatology center, 58.7% were using topical steroids for cosmetic purposes. These values could be comparable to other prevalence studies carried out in Dakar, Senegal and Lome, Togo, where steroids used as bleaching agents accounted for 37.7% and 18.2% respectively^{8,9} and were population-based studies. However, from our own series, the prevalence of steroid use was higher, and both males and females who indulged in this practice were studied.

Very potent steroids were chiefly used and were applied alone or in combination with other depigmenting agents. They were applied twice daily all over the body often without sunscreens. The fact that large quantities of class-1 steroids were applied directly to the skin for protracted periods, the possibility of complications from systemic absorption arose. Signs of exogenous steroid excess^{10,11} have been reported following topical application of doses—as much as 250 g monthly of 0.05% clobetasol propionate for a five-year period. In one series, cases of bone demineralization complicated with avascular necrosis of the hips and vertebral compression fractures have been reported.^{12,13} Systemic complications such as diabetes mellitus and hypertension were documented among some of our patients who utilized 90 g of 0.05% clobetasol propionate and 120 g of Betnovate-N monthly for durations of 11–13.5 years. However, a larger cohort study will be required to establish the exact trend of systemic complications arising from the use of topical steroids.

From our series, all observed cutaneous disorders

Figure 3.

A. Striae on the left forearm



B. Striae with visible veins coursing alongside



on presentation (such as t. incognito, acne vulgaris, pityriasis versicolor, facial hypertrichosis, striae, etc.) were diagnosed as complications of the cosmetic practice resulting from the use of steroids. These disorders were dramatic and widespread, with dermatophyte infections topping the list of infections.

Interestingly, of all the skin lesions observed in this group of individuals, only 1.3% believed their problem had stemmed from their cosmetic practice entailing the use of topical steroids as a body cream.

Individuals with blue ears and severe exogenous ochronosis as complications were not a common observation in this report, in contrast with earlier

reports on the use of bleaching products amongst Africans,^{2,8,9,11} when very high percentages of hydroquinone were used for bleaching. Moreover, in Nigeria, with the recent National Agency for Food and Drug Administration and Control (NAFDAC) policy implementation on the importation of depigmenting agents (such as hydroquinone and mercurial) into the country, the use of steroids has now become more common, as the usual agents are no longer readily found.

It is also pertinent to note that dermatologic practice in our environment, as in any other African or Afro-Caribbean country, has to deal with the huge impact of depigmenting products on cutaneous lesions. The practice has rapidly gained popularity within our environment because the local vasoconstrictory¹⁴ effect that lasts for several hours after topical application gives a satisfying impression of an immediate reduction in pigmentation. This encourages patients to persevere with their use. Withdrawal of the offending steroids usually results in severe withdrawal dermatitis that is unpleasant, with the result that discontinuation is impossible. This was also observed in 1.3% of cases.

In conclusion, cosmetic use of topical steroids exposes the users to several cutaneous complications alongside medical and aesthetic problems. Intriguingly, despite patent protection and sales regulation of compounds such as steroids, they are readily available at affordable prices from non-pharmaceutical stores without a doctor's prescription in our environment, as similarly reported in other African countries. This is quite worrisome, and the challenges require key health policy-makers and officials to devise measures for continuous health education and sensitization of African blacks on the health hazards associated with persistent cosmetic use of topical steroids.

Figure 4. Relationship between continuous use of very potent topical steroids and systemic effect: diabetes mellitus

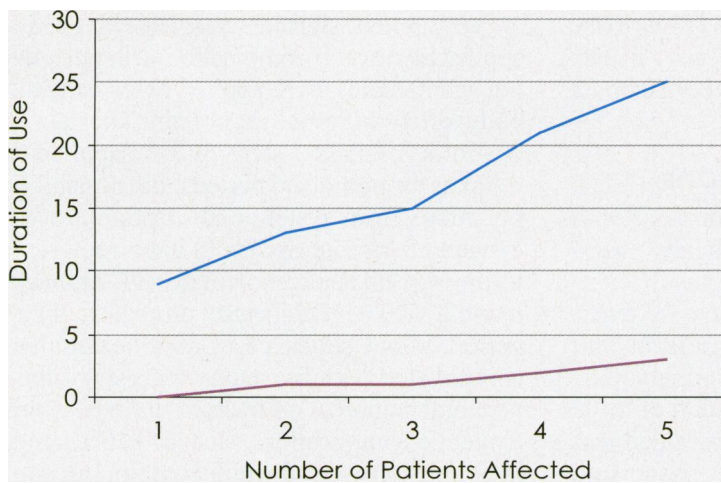
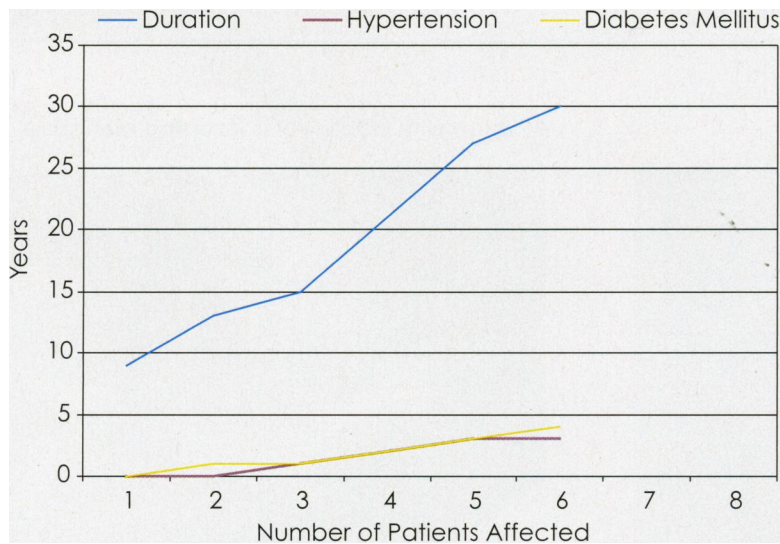


Figure 5. Comparison of systemic complications hypertension and diabetes mellitus with use of topical class-1 steroids



REFERENCES

1. Sams WM, Lynch JP, eds. Principles and Practice of Dermatology, 2nd ed. New York, NY: Churchill Livingstone; 1990:51-53.
2. Findlay GH, Morrison JGL, Simson W. Exogenous ochronosis and pigmented colloid milium from hydroquinone bleaching creams. *Br J Dermatol*. 1975;93:613-622.
3. Barr RD, Rees PH, Cordy PE, et al. Nephrotic syndrome in adult Africans in Nairobi. *Br Med J*. 1972;ii:1314.
4. Solomon BA, Glass AT, Rabbin PR. Tinea incognita and "over-the-counter" potent topical steroids. *Cutis*. 1996;58(4):295-296.
5. Harris DWS, Hunter JAA. The use and abuse of 0.05% clobetasol propionate in Dermatology. *Dermatol Ther*. 1988;6:643-647.
6. Kean FM, Munn SE, Taylor NF, et al. Unregulated use of clobetasol propionate. *Br J Dermatol*. 2001;144:1095-1096.
7. Olumide Y. Abuse of topical steroids in Nigeria. *Nigerian Medical Practitioner*. 1986;11(1):7-12.
8. Wone I, Tal-Dia A, Diallo OF, et al. Prevalence of the use of skin bleaching cosmetics in two areas in Dakar, Senegal (French). *Dakar Med*. 2000;45(2):154-157.
9. Pitche P, Afoune A, Amage U, et al. Prevalence of skin disorders associated with the use of bleaching cosmetics by Lome women (French). *Sante*. 1997;7(3):1614.
10. Carniethers JA, August PJ, Staughton RCD. Observations on the systemic effect of topical clobetasol propionate (dermivate). *Br Med J*. 1975;IV:203-204.
11. Olumide Y. Photodermatoses in Lagos. *Int J Dermatol*. 1987;26(5) 295-299.
12. Lawlor F, Ramabala K. Iatrogenic Cushing's syndrome—cautionary tale. *Clin Exp Dermatol*. 1984;9:286-289.
13. Hogan DJ, Sibley JT, Lane PR. Avascular necrosis of the hips following long term use of clobetasol propionate. *J Am Acad Dermatol*. 1986;14:515-517.
14. McKenzie AW, Stoughton RB. Methods for comparing percutaneous absorption of steroids. *Arch Dermatol*. 1962;86:608-610. ■

The National Medical Association's 2006 Annual Convention and Scientific Assembly

August 5-10, 2006 ■ Dallas, TX ■

http://nmanet.org/Conferences_National.htm

CAREER OPPORTUNITY



MEHARRY MEDICAL COLLEGE • Nashville, TN

The Board of Trustees of Meharry Medical College currently seeks a proven healthcare leader to become the 10th President and Chief Executive Officer of Meharry Medical College. The President and Chief Executive Officer will lead the nation's largest private, independent historically black institution for educating health professionals and scientists in the United States, which includes the School of Medicine, the School of Dentistry, the School of Graduate Studies and Research, outstanding clinical faculty, and a strong linkage to Nashville General Hospital. The President/CEO will also provide leadership to further strengthen the strategic, synergistic partnership through the Meharry-Vanderbilt Alliance. He/she will be expected to work with preeminent physicians, scientists and others to shape and lead this nationally recognized organization.

Located in Nashville, Tennessee, Meharry Medical College exists to improve the health and health care of minority and underserved communities by offering excellent education and training programs in the health sciences; placing special emphasis on providing opportunities to people of color and individuals from disadvantaged backgrounds, regardless of race or ethnicity; delivering high quality health services; and conducting research that fosters the elimination of health disparities.

The successful candidate will likely be a healthcare professional with strong academic credibility. This executive will show progressive administrative responsibility throughout his/her career and have demonstrable success in previous leadership roles within an academic-based organization or system, or in a complex private or commercial enterprise in the life sciences field. The ideal candidate will have a recognized record of intellectual leadership and research accomplishment in basic and/or clinical sciences. Demonstrated ability to obtain extramural research funding from government agencies and/or foundations is strongly desired. Candidates should understand current legislation and compliance with state and federal regulations as it pertains to academic medicine and higher education, as well as an understanding of evolving national and international trends and challenges in clinical practice, education, research; and academic health care management. Excellent communication and interpersonal skills are required. Candidates should value diversity and equal opportunity access to education and health care.

Interested applicants should send a letter of interest and curriculum vitae. Those seeking to nominate potential candidates should send a letter of nomination. Meharry Medical College is an EOE/AA employer and does not discriminate on the basis of gender, age, race, religion, color, national origin, handicap, veteran, or immigrant status in its admissions, employment and education programs or activities.

Correspondence may be sent in confidence to:
Meharry Medical College President and Chief Executive Officer Search Committee
c/o J. Veronica Biggins, Senior Partner
Heidrick & Struggles, Inc.
303 Peachtree Street, Suite 4300, Atlanta, GA 30308
Fax: 404-577-4048 / Email: Meharry@Heidrick.com