

# Hair and Scalp Disorders in Adult and Pediatric Patients With Skin of Color

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## PRACTICE POINTS

- Instruct patients with acquired trichorrhhexis nodosa to discontinue use of heat, colorants, and chemical relaxers on their hair.
- Create a contract with your seborrheic dermatitis patients to have them shampoo at least weekly or every 2 weeks.
- For children with treated tinea capitis that has not completely resolved, increase or extend the griseofulvin dosage, encourage ingestion of fatty foods to enhance absorption, and divide dosage of griseofulvin from once to twice daily.
- Selection of a biopsy site at the periphery of an alopecic area that includes hair and hair follicles and evaluation by a dermatopathologist familiar with the features of central centrifugal cicatricial, traction, and traumatic alopecias will ensure an accurate diagnosis of alopecia.

As increasing numbers of patients of African descent seek treatment for hair and scalp-related diseases, it is imperative that all dermatologists be adequately trained to address the concerns of this patient population. We present must-know information to effectively approach the concerns of patients with seborrheic dermatitis, acquired trichorrhhexis nodosa, acne keloidalis nuchae, pseudofolliculitis barbae, alopecia, and common pediatric hair and scalp disorders.

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One of the most common concerns among black patients is hair- and scalp-related disease. As increasing numbers of black patients opt to see dermatologists, it is imperative that all dermatologists be adequately trained to address the concerns of this patient population. When patients ask for help with common skin diseases of the hair and scalp, there are details that must be included in diagnosis, treatment, and hair care recommendations to reach goals for excellence in patient care. Herein, we provide must-know information to effectively approach this patient population.

## Seborrheic Dermatitis

A study utilizing data from the National Ambulatory Medical Care Survey from 1993 to 2009 revealed seborrheic dermatitis (SD) as the second most common diagnosis for black patients who visit a dermatologist.<sup>1</sup> Prevalence data from a population of 1408 white, black, and Chinese patients from the United States and China revealed scalp flaking in 81% to 95% of black patients, 66% to 82% in white patients, and 30% to 42% in Chinese patients.<sup>2</sup> Seborrheic dermatitis has a notable prevalence in black women and often is considered normal by patients. It can be exacerbated by infrequent shampooing (ranging from once per month or longer in between shampoos) and the inappropriate use of hair oils and pomades; it also has been associated with hair breakage,

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lichen simplex chronicus, and folliculitis. Seborrheic dermatitis must be distinguished from other disorders including sarcoidosis, psoriasis, discoid lupus erythematosus, tinea capitis, and lichen simplex chronicus.

Although there is a paucity of literature on the treatment of SD in black patients, components of treatment are similar to those recommended for other populations. Black women are advised to carefully utilize antidandruff shampoos containing zinc pyrithione, selenium sulfide, or tar to avoid hair shaft damage and dryness. Ketoconazole shampoo rarely is recommended and may be more appropriately used in men and boys, as hair fragility is less of a concern for them. The shampoo should be applied directly to the scalp rather than the hair shafts to minimize dryness, with no particular elongated contact time needed for these medicated shampoos to be effective. Because conditioners can wash off the active ingredients in therapeutic shampoos, antidandruff conditioners are recommended. Potent or ultrapotent topical corticosteroids applied to the scalp 3 to 4 times weekly initially will control the symptoms of itching as well as scaling, and mid-potency topical corticosteroid oil may be used at weekly intervals.

Hairline and facial involvement of SD often occurs, and low-potency topical steroids may be applied to the affected areas twice daily for 3 to 4 weeks, which may be repeated for flares. Topical calcineurin inhibitors or antifungal creams such as ketoconazole or econazole may then provide effective control. Encouraging patients to increase shampooing to once weekly or every 2 weeks and discontinue use of scalp pomades and oils also is recommended. Patients must know that an itchy scaly scalp represents a treatable disorder.

### Acquired Trichorrhexis Nodosa

Hair fragility and breakage is common and multifactorial in black patients. Hair shaft breakage can occur on the vertex scalp in central centrifugal cicatricial alopecia (CCCA), with random localized breakage due to scratching in SD. Heat, hair colorants, and chemical relaxers may result in diffuse damage and breakage.<sup>3</sup> Sodium-, potassium-, and guanidine hydroxide-containing chemical relaxers change the physical properties of the hair by rearranging disulfide bonds. They remove the monomolecular layer of fatty acids covalently bound to the cuticle that help prevent penetration of water into the hair shaft. Additionally, chemical relaxers weaken the hair shaft and decrease tensile strength.

Unlike hair relaxers, colorants are less likely to lead to catastrophic hair breakage after a single use and require frequent use, which leads to cumulative damage. Thermal straightening is another cause of hair-shaft weakening in black patients.<sup>4,5</sup> Flat irons and curling irons can cause substantially more damage than blow-dryers due to the amount of heat generated. Flat irons may reach a high temperature of 230°C (450°F) as compared to 100°C (210°F) for a blow-dryer. Even the simple act of combing the hair can cause hair

breakage, as demonstrated in African volunteers whose hair remained short in contrast to white and Asian volunteers, despite the fact that they had not cut their hair for 1 or more years.<sup>6,7</sup> These volunteers had many hair strand knots that led to breakage during combing and hair grooming.<sup>6</sup>

There is no known prevalence data for acquired trichorrhexis nodosa, though a study of 30 white and black women demonstrated that broken hairs were significantly increased in black women ( $P=.0001$ ).<sup>8</sup> Another study by Hall et al<sup>9</sup> of 103 black women showed that 55% of the women reported breakage of hair shafts with normal styling. Khumalo et al<sup>6</sup> investigated hair shaft fragility and reported no trichothiodystrophy; the authors concluded that the cause of the hair fragility likely was physical trauma or an undiscovered structural abnormality. Franbourg et al<sup>10</sup> examined the structure of hair fibers in white, Asian, and black patients and found no differences, but microfractures were only present in black patients and were determined to be the cause of hair breakage. These studies underscore the need for specific questioning of the patient on hair care including combing, washing, drying, and using products and chemicals.

The approach to the treatment of hair breakage involves correcting underlying abnormalities (eg, iron deficiency, hypothyroidism, nutritional deficiencies). Patients should “give their hair a rest” by discontinuing use of heat, colorants, and chemical relaxers. For patients who are unable to comply, advising them to stop these processes for 6 to 12 months will allow for repair of the hair shaft. To minimize damage from colorants, recommend semipermanent, demipermanent, or temporary dyes. Patients should be counseled to stop bleaching their hair or using permanent colorants. The use of heat protectant products on the hair before styling as well as layering moisturizing regimens starting with a moisturizing shampoo followed by a leave-in, dimethicone-containing conditioner marketed for dry damaged hair is suggested. Dimethicone thinly coats the hair shaft to restore hydrophobicity, smoothes cuticular scales, decreases frizz, and protects the hair from damage. Use of a 2-in-1 shampoo and conditioner containing anionic surfactants and wide-toothed, smooth (no jagged edges in the grooves) combs along with rare brushing are recommended. The hair may be worn in its natural state, but straightening with heat should be avoided. Air drying the hair can minimize breakage, but if thermal styling is necessary, patients should turn the temperature setting of the flat or curling iron down. Protective hair care practices may include placing a loosely sewn-in hair weave that will allow for good hair care, wearing loose braids, or using a wig. Serial trimming of the hair every 6 to 8 weeks is recommended. Improvement may take time, and patients should be advised of this timeline to prevent frustration.

### Acne Keloidalis Nuchae

Acne keloidalis nuchae (AKN) is characterized by papules and pustules located on the occipital scalp and/or the nape of

the neck, which may result in keloidal papules and plaques. The etiology is unknown, but ingrown hairs, genetics, trauma, infection, inflammation, and androgen hormones have been proposed to play a role.<sup>11</sup> Although AKN may occur in black women, it is primarily a disorder in black men. The diagnosis is made based primarily on clinical findings, and a history of short haircuts may support the diagnosis. Treatment is tailored to the severity of the disease (Table 1). Avoidance of short haircuts and irritation from shirt collars may be helpful. Patients should be advised that the condition is controllable but not curable.

### Pseudofolliculitis Barbae

Pseudofolliculitis barbae (PFB) is characterized by papules and pustules in the beard region that may result in postinflammatory hyperpigmentation, keloidal scar formation, and/or linear scarring. The coarse curled hairs characteristic of black men penetrate the follicle before exiting the skin and penetrate the skin after exiting the follicle, resulting in inflammation. Shaving methods and genetics also may contribute to the development of PFB. As with AKN, diagnosis is made clinically and does not require a skin biopsy. Important components of the patient's history that should be obtained are hair removal practices and the use of over-the-counter products (eg, shave [pre and post] moisturizers, exfoliants, shaving creams or gels, keratin-softening agents containing  $\alpha$ - or  $\beta$ -hydroxy acids). A bacterial culture may be appropriate if a notable pustular component is present. The patient should be advised to discontinue shaving if possible, which may require a physician's letter explaining the necessity to the patient's employer. Pseudofolliculitis barbae often can be prevented or lessened with the right hair removal strategy. Because there is not one optimal hair removal strategy that suits every patient, encourage the patient to experiment

with different hair removal techniques, from depilatories to electric shavers, foil-guard razors, and multiple-blade razors. Preshave hydration and postshave moisturization also should be encouraged.<sup>12</sup> Benzoyl peroxide-containing shave gels and cleansers, as well as moisturizers containing glycolic, salicylic, and phytic acids, may minimize ingrown hairs, papules, and inflammation.

Other useful topical agents include eflornithine hydrochloride to decrease hair growth, retinoids to soften hair fibers, mild topical steroids to reduce inflammation, and/or topical erythromycin or clindamycin if pustules are present.<sup>13</sup> Oral antibiotics such as doxycycline, minocycline, or erythromycin can be added for more severe cases of inflammation or infection. Procedural interventions include laser hair removal to prevent PFB and intralesional triamcinolone 10 to 40 mg/cc every 4 to 6 weeks, with the total volume depending on the size and number of lesions.

### Alopecia

Alopecia is the sixth most common diagnosis seen in black patients visiting a dermatologist.<sup>14</sup> The physician's response to the patient's chief concern of hair loss is key to building a relationship of confidence and trust. Trivializing the concern or dismissing it will undermine the physician-patient relationship. A survey by Gathers and Mahan<sup>15</sup> revealed that 68% of patients thought that physicians did not understand their hair.

Hair loss negatively impacts quality of life, and a study of 50 black South African women with alopecia demonstrated a notable disease burden. Factors with the highest impact were those related to self-image, relationships, and interactions with others.<sup>16</sup>

It is not unusual for black women to have multiple types of alopecia identified in one biopsy specimen. Wohltmann and Sperling<sup>17</sup> demonstrated 2 or more different types of

**TABLE 1. Treatment of Acne Keloidalis Nuchae by Disease Severity**

#### Mild

- Mid- to high-potency topical corticosteroids (alternate 2 wk on/off to reduce risks of long-term steroid use)<sup>11</sup> with or without tretinoin cream 0.05% once daily
- Intralesional triamcinolone acetonide 10–40 mg/cc injected once every 4–6 weeks
- Topical antibiotics: clindamycin 1% solution or gel or erythromycin 2% solution or gel applied twice daily (for pustular lesions)

#### Moderate

- Intralesional triamcinolone acetonide 10–40 mg/cc injected once every 4–6 weeks
- Oral antibiotics: doxycycline or minocycline 50–100 mg twice daily or erythromycin 333 mg 3 times daily
- Cryotherapy with 2 freeze-thaw cycles of 3–10 s
- Excision of individual lesions and clusters by tangential shave or punch excision with subsequent intralesional triamcinolone acetonide 10–40 mg/cc
- Laser epilation with 1064-nm Nd:YAG or 810-nm diode laser

#### Severe

- Isotretinoin 0.25–1 mg/kg/d
- Prednisone taper starting to 20–40 mg once daily in single or divided doses
- Elliptical excision with healing by secondary intention or primary closure
- Lasers: CO<sub>2</sub>, 1064-nm Nd:YAG, 585-nm pulsed dye, or 810-nm diode

alopecia in more than 10% of biopsy specimens of alopecia, including CCCA, androgenetic alopecia, end-stage traction alopecia, telogen effluvium, and tinea capitis. A complete history, physical examination, and appropriate procedures (eg, hair pull test, dermatoscopic examination and scalp biopsy) likely will yield an accurate diagnosis. Table 2 highlights important questions that should be asked about the patient's history.

Physical examination of the scalp including dermatoscopic examination and a hair pull test as well as an evaluation of other hair-bearing areas may suggest a diagnosis that can be confirmed with a scalp biopsy.<sup>18,19</sup> Selection of a biopsy site at the periphery of the alopecic area that includes hair and consultation with a dermatopathologist familiar with features of CCCA, traction, and traumatic alopecia are important for making an accurate diagnosis.

### Tinea Capitis in Black Pediatric Patients

Tinea capitis, a fungal infection of the scalp and hair, is one of the most common issues in children with skin of color. Clinical presentation may include widely distributed scaling, annular scaly plaques, annular patches of alopecia studded with black dots (broken hairs), and/or annular inflammatory plaques. Although scalp hyperkeratosis often is a hallmark of pediatric tinea capitis, it is not diagnostic. The differential diagnosis of pediatric scalp hyperkeratosis/scaling includes tinea capitis, SD, atopic dermatitis, psoriasis, and seborrheic dermatitis.<sup>20,21</sup> Clues to accurate diagnosis of tinea capitis may be

found by examination of the adult who combs the child's hair, as erythematous annular scaly plaques representing tinea corporis may be observed on the forearms or thighs. Although the thighs are a seemingly unusual location, the frequent practice of the child sitting on the floor between the legs of the adult during hairstyling provides a point of contact for the transmission of tinea from the child's scalp to the thighs or forearms of the adult. Once tinea capitis is clinically suspected, the diagnosis is confirmed by a fungal culture. Adequate sampling is obtained by clipping hairs in an area of scaling for submission and vigorously rubbing the area of black dots or hyperkeratosis with a cotton swab.

Hubbard<sup>22</sup> shed light on the decision to treat tinea capitis empirically or await the culture results. One hundred consecutive children (98 were black) presented with the constellation of scalp alopecia, scaling, pruritus, and occipital lymphadenopathy. Sixty-eight of those children had positive fungal cultures, and of them, 60 had both occipital lymphadenopathy and scaling and 55 had both occipital lymphadenopathy and alopecia.<sup>22</sup> Thus, occipital lymphadenopathy in conjunction with alopecia and/or scaling is predictive of tinea capitis in this population and suggests that the initiation of treatment prior to confirmative culture results is appropriate.

The mainstay of treatment for tinea capitis is griseofulvin, but it is often underdosed and not continued for an adequate period of time to ensure clearance of the infection. Griseofulvin microsize (125 mg/5 mL) at the dosage of

**TABLE 2. Important Questions to Ask Black Patients With Alopecia**

Key Questions	Factors to Consider
Is your hair coming out by the root (long strands)?	Telogen effluvium, alopecia areata, androgenetic alopecia, medications
Is your hair getting shorter?	Breakage, abnormal hair shaft, trichotillomania, lupus, CCCA
Do you have bald patches?	Alopecia areata, androgenetic alopecia, traumatic (ie, hair has been physically pulled out such as when removing a glued-on weave), CCCA
Have you had hair loss since childhood?	Alopecia areata, traction alopecia, CCCA
Are you currently taking any medications?	Antihypertensives, contraceptives, hormone replacement therapy, oral acne medications, antibiotics, antifungal agents, antidepressants, anticoagulants, cholesterol-lowering medications, immunosuppressants
Do you have irregular menstruation, excessive facial hair growth, or acne?	Androgenetic alopecia, telogen effluvium
Have you had physical or emotional stress in the last 3 to 6 months?	Telogen effluvium
Do you have a family history of alopecia?	Androgenic alopecia, alopecia areata, CCCA
Do you wear tight ponytails, braids, or cornrows?	Long-term traction scarring
Do you use hot combs and/or curling or flat irons?	Hair breakage
Do you use chemical relaxers?	Chemical burns, hair breakage
Locks including sister locks?	Traction alopecia
Do you have a sewn- or glued-in weave or braids with extensions?	Traction or traumatic alopecia (though often used to hide alopecia)

Abbreviation: CCCA, central centrifugal cicatricial alopecia.

20 to 25 mg/kg once daily for 8 to 12 weeks is recommended instead of a lower-dosed 4- to 6-week course.<sup>23,24</sup>

Options for treating a child with residual disease include increasing and/or extending the griseofulvin dosage, encouraging ingestion of fatty foods to enhance absorption, dividing the dosage of griseofulvin from once daily to twice daily, changing therapy to oral terbinafine due to resistance to griseofulvin, examining siblings as a source of reinfection, and reviewing the positive fungal culture report to distinguish *Trichophyton tonsurans* versus *Microsporum canis* as the causative agent and adjust treatment accordingly. Although griseofulvin is the first-line treatment for *M canis*, terbinafine, which is approved for children 4 years and older for tinea capitis, is most efficacious for *T tonsurans*.<sup>25</sup> Treatment with terbinafine is weight based and should extend for 2 to 4 weeks for *T tonsurans* and 8 to 12 weeks for *M canis*.

Antifungal shampoos may help reduce household spread of tinea and decrease transmissible fungal spores, but they may cause hair dryness and breakage.<sup>26,27</sup> Antifungal shampoos can be applied directly onto the scalp for a 5- to 10-minute contact time and rinsed, and then the hair should be shampooed with a moisturizing shampoo followed by a moisturizing conditioner. Hair conditioners may decrease household spread of tinea capitis and should be used by the patient and other members of the household.<sup>28</sup> Infection control may be enhanced by advising parents to dispose of hair pomades and washing hair accessories, combs, and brushes in hot soapy water, preferably in the dishwasher.

## Hair Growth

The inability of the hair of black children to grow long is a common concern for parents of toddlers and preschool-aged children. Although the hair does grow, it grows more slowly than hair in white children (0.259 vs 0.330 mm per day), and it is likely to break faster than it is growing in black versus white children (146.6 vs 13.13 total broken hairs).<sup>8</sup> Reassurance that the hair is indeed growing and that the length will increase as the child matures is important. Avoidance of hairstyles that promote traction and use of hair extensions, as well as use of moisturizing shampoos and conditioners, may minimize breakage and support the growth of healthy hair.

## Conclusion

Hair- and scalp-related disease in black adults and children is commonly encountered in dermatology practice. It is important to understand the intrinsic characteristics of facial and scalp hair as well as hair care practices in this patient population that differ from those of white and Asian populations, such as frequency of shampooing, products, and styling. Familiarity with these differences may aid in effective diagnosis, treatment, and hair care recommendations in patients with these conditions.

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