African American Hair and Scalp Disorders

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Differences in Hair Structure

Asian
Caucasian
African
Hair Structure
Asian

- Round in cross-section
- Largest cross-sectional area
- Straight
- Naturally shed hairs usually have original or cut tips
- No spontaneous knotting observed

Hair Structure
Caucasian

- Elliptical in cross-section
- Smallest cross-sectional area
- Straight or slightly curved
- Naturally shed hair usually have original or cut tip

Hair Structure

Caucasian

Spontaneous knotting is rarely observed

Hair Structure

African

- Most elliptical and flattened in cross-section
- Ribbon-like
- Tightly coiled
- Most naturally shed hairs have frayed tip

Hair Structure

African

Spontaneous knotting often observed

Hair Structure

African

Longitudinal splitting, fissures, and breaking of hair shaft observed

Hair Structure

- There are no differences in the type of keratin in Asian, Caucasian, or African hair.
- There are conflicting studies on the amino acid composition of Asian, Caucasian, and African hair, however, most recent studies do not demonstrate a difference.

Hair Structure

African hair in comparison to Caucasian and Asian hair has

- decreased tensile strength
- decreased resistance to breakage as measured by cyclic axial stressing of hair fibers
- decreased hair density
- fewer elastic fibers anchoring hair follicles to the dermis

Kamath Y, Hornby S, Winsey N, Abstract of 1st Annual Meeting of Ethnic Hair and Skin: What is the State of the Science; September 29-30; Chicago


Why is African Hair Fragile?

Mechanical factors are likely to be responsible for the fragility with breakage associated with combing seen in natural African hair

- asymmetric follicle bulb differentiation
- follicle shape


African American Hair

- Most studies are performed on African hair
- Due to the varied genetic background of African Americans, there is a great variation in hair texture and phenotypic properties in this group
- Most AA range from curly to tightly coiled hair
Hair Structure

- Due to the tightly coiled nature and fragility of African hair many different hair care practices are used to improve manageability.
- Hair plays a large role in the culture.
IT'S TIME TO GET IT STRAIGHT
FROM PRODUCER CHRIS ROCK
GOOD HAIR
COMING SOON
Hairstyling Methods

In order to understand African-American scalp and hair disorders, it is important to understand the hair care practices and how they can contribute to underlying disease.
Hairstyling Methods

- Unprocessed hair styles
  - Afros
  - Dreadlocks
  - Twists
  - Braiding with cornrows or multitufted braids

- Extensions

- Hot combing

- Chemical relaxers

- Keratin
Hairstyles not associated with hair loss

AFRO
Afro

Natural hairstyle

Pomades are usually applied to improve manageability

Not associated with any alopecia
Hairstyles associated with hair loss

EXTENSIONS
CORNROWS
LOCAS
TRACTION
RELAXERS?
KERATIN?
HOT COMB?
Extensions

- Variations include braiding hair onto existing hair or gluing hair onto existing hair.
- Common cause of traction alopecia due to excessive tension on the hair.
Extensions “Sewn In”

- Common hair care practice in African-American adults and teenagers
- After cornrows are placed, hair is sewn onto scalp
- Common cause of traction frontal hairline
Extensions “Glued In”

- Black glue contains paraphenylenediamine
- Observed increase in alopecia due to glue applied to scalp
Extensions “Glued In”

- **Ingredients:**
  “Natural Rubber, Latex, Water, Ammonium Hydroxide, Color”

- **Recommend all patients avoid glue due the risk of permanent alopecia**
Hair Glue Associated with Anaphylaxis
ALLERGIC REACTION TO HAIR GLUE KILLS LONDON WOMAN

February 2nd, 2012 - By Brande Victorian
Glued in extensions
Can cause severe irreversible alopecia
Case reports of anaphylaxis
Scarring Alopecia due to Glue
Before and after one year of monthly intralesional steroids
Locs

- Natural hairstyle in which the hair is not combed and forms knots spontaneously
- Smaller locks can be achieved by twisting hair
- Long locks associated with traction
Corn rowing

- Corn rowing is a type of braiding in which the hair lies adjacent to the scalp.
- It has been practiced for centuries in Africa and is common today in African-American children and adults.
- Can cause traction alopecia if hairstyle is too tight.
Multitufted Braiding

- Multitufted braids are multiple ponytails common in African-American children.
- These braids when pulled too tightly can cause traction alopecia.
Chemical Relaxers

- Utilized by 60-70% of AA women
- Various chemicals can be used to break the disulfide bonds and chemically straighten hair
Chemical Relaxers

- Sodium hydroxide or guanidine hydroxide
- Break the disulfide bonds and chemically straightens hair
- Relaxer is combed through the tightly coiled hair
- Repeated at 6-12 week intervals to the new growth
Chemical Relaxers

- Sodium hydroxide is the most effective chemical relaxer ("lye" relaxer)
- Guanidine hydroxide is the popular "no-lye" relaxer introduced in the seventies
  - Less irritating to the scalp
  - But may be more drying to the hair
- Thioglycalates are more commonly used in curly perms and are too drying as relaxers
Chemical Relaxers

- Can cause superficial, self-limited chemical burns to the scalp if left on the scalp too long.
- However, if used incorrectly, a “chemical alopecia” can result due to significant breakage of the chemically damaged hair.
Acquired Trichorrhexis Nodosa “Breakage”

- The hair is so fragile that it breaks proximally, giving the appearance of having been cut close to the scalp
Breakage from Chemical Relaxer
“Acquired Trichorrhexis Nodosa”
Keratin “Brazilian Blowout”

Reports of adverse reactions to keratin treatments (47 complaints to FDA in a 2 year period)

- Respiratory complaints
- Blisters
- Hair loss
- Nose bleeds
- Headaches
- Vomiting
- Hospitalization

FDA now taking action to

- regulate the formaldehyde content and labeling of keratin hair treatments
- discipline manufacturers who misbrand their products as “Formaldehyde Free.”
Hot Combing

- In 1905, Madame C.J. Walker developed a conditioning treatment for hair.
- She popularized the steel hot comb and customized it for use on AA hair.
- By marketing her hair care system, she became the first woman millionaire of any race on record in the United States.
Hot Combing (aka Pressing)

- Oil is applied to the hair
- Comb, heated to up to over 300 degrees Fahrenheit, is combed through the hair which breaks the disulfide bonds to straighten the hair
- Has been implicated as a cause of scarring alopecia in AA women
- Never proven!
Hair and Scalp Disorders

RISK FACTORS

TREATMENT
Central Centrifugal Cicatricial Alopecia
Hot Comb Alopecia

- First described in the 1960’s
- Clinically, patients described were AA women with a history of hot comb use presenting with progressive scarring alopecia on the crown of the scalp
- Thought to be caused by extremely hot petrolatum damaging the hair follicles
- This pattern was believed to be most prominent on the crown due to gravity

Hot Comb Alopecia

- Controversial because as hot comb use became less frequent most patients who presented with this pattern of hair loss had no history of hot comb use.
- In 1992, hot comb alopecia was renamed follicular degeneration syndrome.
- In 2002, renamed CCCA.
Central Centrifugal Scarring Alopecia

- Progressive scarring alopecia on the vertex of the scalp but does not assume a particular cause
- “Cicatricial” and “Scarring” frequently used interchangeably
Central Centrifugal Cicatricial Alopecia

Although inflammation was absent in the original description, current consensus is that inflammatory papules may be present in early disease
Central Scalp Alopecia Photographic Scale
Which of the following findings is associated with CCCA?

A  Tinea capitis
B  Type 2 diabetes
C  Traction
D  Family history
E  All of the above
Which of the following findings is clearly associated with CCCA?

A   Tinea capitis
B   Type 2 diabetes
C   Traction
D   Family history
E   All of the above
Central Centrifugal Cicatricial Alopecia

Recent associations
- Type 2 Diabetes
- Traction
- Damage
- Cornrows
- Braids/Extensions
- Family History
- Hx of tinea capitis
- Use of hair dyes

No association
- Hot Combs
- Reaction to hair care product
- Male pattern hair loss in fathers
- Seborrheic dermatitis
- Bacterial infection
- Relaxers?

Kyei A Arch Dermatol. 2011;147(8):909-914
Gathers, RC J Am Acad Dermatol. 2009 Apr;60(4):574-8
McMichael AJ, Cosmetic Derm 2011;24:331-337
Olsen, E J Am Acad Dermatol, Volume 64, Issue 2, Pages 245-252
What about relaxers?
Conflicting Data on the Use of Relaxers

101 subjects surveyed (51 with CCCA and 50 controls)¹

- No difference in rate of relaxer use between the two groups
- Note: strong association with the use of sewn in extensions, cornrows, and braids

529 subjects (5.6% with “central scalp hair loss”)³

- No association with relaxer or hot comb use, history of seborrheic dermatitis or reaction to a hair care product, bacterial infection, or male pattern hair loss in fathers of subjects
- Note: there was an association with a history of tinea capitis

Conflicting Data on the Use of Relaxers

39 subjects (20 “scarred alopecia” 19 “nonscarred alopecia”)

- Prolonged and frequent use of relaxers was more common in the scarring alopecia group compared to the nonscarring alopecia group (23.2 ± 9.3 years)

44 subjects (21 with scarring alopecia and 23 with no hair loss)

- Current use of relaxers was lower in the scarring alopecia group
- Duration of use was significantly longer in the scarring alopecia group (18.6 vs 13.0 years)

What about relaxers?

- No clear evidence to universally stop relaxers in all patients
  - Ask patient if they have hair symptoms with relaxers
- Apply a base to the scalp prior to relaxers
- Decrease frequency of relaxer touch-ups
  - Every 8 weeks or less
CCC A Treatment

- IL TAC 4-5mg/cc q 4-6 weeks
- Clobetasol topically
- Biotin
- Minoxidil 5%
- "Other" hair vitamins
- Oral antibiotics
  - Doxycycline 100-200mg QD
  - Tetracycline
  - Rifampin/Clindamycin
Key points-
Set realistic Expectations

1\textsuperscript{st} goal-no further hair loss
\quad \circ No further hair loss is a clinical success

2\textsuperscript{nd} goal-\textbf{possible} growth of new hair
\quad \circ 10-30\% regrowth is a clinical success depending on the stage
Central Centrifugal Cicatricial Alopecia

• Before and three months after treatment with clobetasol foam and intralesional triamcinolone 4mg/cc
Traction Alopecia
Traction Alopecia

- Occurs when hair is pulled too tightly
- Classically, there is hair loss on the frontal and/or temporal scalp with a rim of short hairs at the hairline
Traction Alopecia

- Described as early as 1907 in West Greenland by Austrian dermatologist Trebitsch
- The traditional Greenlandic hairstyle at that time resembled the modern day ponytail
- Women developed a characteristic alopecia on the parietal and temporal scalp
- Trebitsch named this pattern of alopecia “alopecia Groenlandica”

*Trebitsch, R. Wien Klin Wschr.1907;20:1404*
# Traction Alopecia

<table>
<thead>
<tr>
<th>Country</th>
<th>Author</th>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>Japan</td>
<td>Aramaki</td>
<td>1931</td>
<td></td>
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<tr>
<td>Europe</td>
<td>Sabaroud</td>
<td>1931</td>
<td>“alopecie liminaire frontale”</td>
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<tr>
<td>Brazil</td>
<td>Ribiero</td>
<td>1937</td>
<td>“traumatic marginal alopecia”</td>
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<td>Denmark</td>
<td>Horjth</td>
<td>1957</td>
<td>young girls with pony tails</td>
</tr>
<tr>
<td>Northern Sudan</td>
<td>Morgan</td>
<td>1957</td>
<td>midline due to extensions</td>
</tr>
</tbody>
</table>

The term “traction alopecia” was adopted by Slepyan in 1958 to describe all forms of hair loss due to continued prolonged traction on the hair.

Sabaroud, R. De l’alopecie liminaire frontale. Ann Dermato Syphiligr.1931;2:446
Hjorth N. Traumatic marginal alopecia, a special type: alopecia Groenlandica. BrJDer 1957;69:319
Which hairstyle is associated with the highest risk of traction alopecia?

A. Cornrows on natural hair
B. Cornrows on chemically relaxed hair
C. Hair extensions on natural hair
D. Ponytails
E. All of the above
Traction Alopecia

A. Cornrows on natural hair
B. Cornrows on chemically relaxed hair
C. Hair extensions on natural hair
D. Ponytails
E. All of the above
Traction Alopecia

- South African Study of 1042 school boys and girls
  - Overall prevalence of 17.1% in girls
    - 8.6% in the first year of school
    - 21.7% in the last year of high school
  - Increased rate of traction alopecia with chemically relaxed hair (22.1%) compared to unprocessed hair (5.2%)

Traction Alopecia: Risk Factors

- **South African Study**
- Traction (eg, braids, weaves) on relaxed hair is associated with the highest risk of traction alopecia compared to natural hair (OR 3.47)
- The risk also increases with hairdressing “symptoms”, the highest being tight braids that cause pimples (OR 1.98)

Traction Alopecia: Risk Factors

- **Detroit study**
  - Wearing cornrows in the last 12 months (OR 2.4)
  - History of chemical relaxer (OR 2.3)
  - Wearing ponytails (OR 2.0)*not statistically significant

- Cornrows without relaxer (aOR 3.02)
- Cornrows with relaxer (aOR 5.27)

*Wright D, Gathers R, Kapke A Hair Care Practices and their association with scalp and hair disorders in AA girls, J Am Acad Derm 64(2) Feb 2011*
Traction Alopecia

Risk factors

- Traction (braids/weaves) on relaxed hair (OR 3.47)
- Hair dressing symptoms-highest was tight braids that caused pimples (OR 1.98)
- Wearing cornrows in the last 12 months (OR 2.4)
- History of chemical relaxer (OR 2.3)
  - Cornrows without relaxer (aOR 3.02)
  - Cornrows with relaxer (aOR 5.27)

No association

- Afros

Wright D, Gathers R, Kapke A J Am Acad Derm 64(2) Feb 2011
Traction Alopecia

- Traction alopecia is preventable with early intervention
- Educate the patient to avoid tight hairstyles

Skin and Allergy News, February 2002
Recommendations for traction alopecia

- To avoid traction alopecia
  - For young children-educate the parents to avoid tight cornrows or pulling chemically relaxed hair into tight hairstyles
  - If child/parent prefers cornrows-delay chemical relaxers
  - For adults who prefer weaves-suggest that they have them done on natural hair to lower the risk

- "Avoid all hairstyles that induce pain"

- 2-5% Minoxidil has been reported in adults
- Consider intralesional steroids
Which of the following are appropriate diagnostic tests in this patient?

A   ANA  
B   Scalp biopsy  
C   CMP  
D   CBC  
E   A and B
Frontal Fibrosing Alopecia

Which of the following are appropriate diagnostic tests in this patient?

A  ANA
B  Scalp biopsy
C  CMP
D  CBC
E  A and B
Is this traction alopecia?
Frontal Fibrosing Alopecia

- Hair loss on the frontal hairline, and may also cause hair loss in other areas such as the eyebrows or axilla
- In the differential diagnosis of traction alopecia
- Clinically characterized by
  - perifollicular erythema
  - follicular hyperkeratosis
  - scarring
Traction Alopecia                     Frontal Fibroising Alopecia
Frontal Fibrosing Alopecia

Treatment

- IL TAC 4-5mg/cc q 4-6 weeks
- Topical steroids (use caution close to the face)
- 97% of treated patients with intralesional corticosteroids had a reduction in symptoms and hairline stabilization (n=62)
- 31% of patients were able to stop treatments and remained in remission for six months to six years.

Recent associations

- lichen planus pigmentosus
- 14% of patients have autoimmune connective tissue disease


Frontal Fibrosing Alopecia associated with Lichen Planopilaris

A, Lichen planus pigmentosus and frontal fibrosing alopecia. Diffuse hyperpigmentation of upper chest, neck, and cheeks with loss of eyebrow hair and recession of frontal hairline. B, A punch biopsy demonstrates an atrophic lichenoid dermatitis with many perijunctional necrotic keratinocytes and melanophages, as is typical of lichen planus pigmentosus. C, Transverse sectioning of a punch biopsy of the scalp demonstrates concentric perifollicular fibrosis, limited compound follicle formation, and a modest lymphocytic infiltrate. This combination is diagnostic of a lymphocyte-mediated primary cicatricial alopecia, and clinicopathologic correlation favored a diagnosis of frontal fibrosing alopecia.
Seborrheic Dermatitis
Seborrheic Dermatitis

Risk factors
- Hair extensions (OR 2.9)
- History of chemical relaxer (OR 1.8)
- Infrequent hair oil application (less than once daily) (OR 3.69)

No association
- Hair washing frequency was not associated with seborrheic dermatitis

Wright D, Gathers R, Kapke A Hair Care Practices and their association with scalp and hair disorders in AA girls, J Am Acad Derm 64(2) Feb 2011
Seborrheic Dermatitis: Treatment

- **Topical steroid**
  - Ointment
  - Foam
  - Solution
  - Lotion
  - Spray
  - Shampoo

- **Topical Antifungal**
  - Lotion
  - Cream
  - Shampoo

Many patients prefer ointments over solutions which are typically alcohol based and can be drying.

ASK THE PATIENT which steroid vehicle he or she would prefer.
How often to wash hair?
Survey of 201 AA girls 1 to 15 yo in primary care and dermatology clinics in Detroit

99% used oil, grease, or lotion on hair and/or scalp
61% shampooed every 2 weeks
22% shampooed once per week or more often
17% shampooed every 3rd or 4th week

Wright D, Gathers R, Kapke A Hair Care Practices and their association with scalp and hair disorders in AA girls, J Am Acad Derm 64(2) Feb 2011
Seborrheic Dermatitis: How often to Wash Hair?

- There was no correlation between frequency of hair washing and seborrheic dermatitis

- Understand that most AA women and girls do not wash their hair daily due to
  - time consuming styling techniques
  - a tendency towards dry, fragile hair

- Recommending daily washing is unrealistic

- Washing hair more often than once weekly is not necessary for treatment
The Natural Hair Movement
Take Home Messages

TRACTION ALOPECIA
- To reduce the risk of traction, apply braids/extensions to natural hair (not relaxed)
- Do not confuse with frontal fibrosing alopecia (check ANA)

SEBORRHEIC DERMATITIS
- No relation to frequency of hair washing (Recommend once weekly)

CCCA
- Avoid braids/extensions (strong association)
- No relation to relaxers or hot combs

TELL PATIENTS TO AVOID GLUE due to the risk of permanent alopecia!!!
Thank You!