HOW DO SKIN DISEASES PRESENT DIFFERENTLY IN PEDIATRIC PATIENTS OF COLOR?
AND SOME REASONS WHY…

NANETTE SILVERBERG MD

CHIEF, PEDIATRIC DERMATOLOGY, MOUNT SINAI HEALTH SYSTEMS

CLINICAL PROFESSOR OF DERMATOLOGY AND PEDIATRICS

ICAHN SCHOOL OF MEDICINE AT MT SINAI, NEW YORK, NY

CONFLICTS OF INTEREST

- Adviser/ Speaker: Incyte, Loreal, Pelthos, Regeneron/ Sanofi,Verrica
- Investigator: Avita, Incyte
- Grants: ACDS, Incyte, PeDRA, Vitiligo Research Foundation

WHAT IS SKIN OF COLOR

- The Skin of Color Society (established 2004) identifies people of color as “individuals of Asian, Hispanic/Latino, African, Native American, Pacific Island descent, and mixtures thereof.” Pediatric populations of color are children within this subgroup, including indigenous peoples such as Native Alaskans.

ARE RACE AND ETHNICITY AS SOCIAL CONSTRUCTS VALID FOR SCIENTIFIC USAGE?

- Race and ethnicity are social constructs used by demographers
  - Used for the census to understand demographic, projections
  - Valid for prediction of disparity
- They are often not valid as explanations of differences
  - In fact, they can be used for false science and eugenics
- Care must be taken in addressing outcomes without additional data points such as socioeconomics, parental health and education, neighborhood
- “algorithms, there is growing recognition that they may lead to unintended racially discriminatory practices, raising concerns about the potential for algorithmic bias. An intuitive precaution against such bias is to remove race and ethnicity information as an input to health care algorithms, mimicking the idea of "race-blind" decisions.”

- Cabreros I. Health Aff (Millwood). 2022 Aug;41(8):1153-1159

PIGMENTATION DEVELOPS OVER TIME

- At birth the eyes, hair and skin may be light in color
  - Melanocyte migration may not be complete at birth
- Pigmentation is seen first in the genitalia, often hyperpigmentation in darker children
- Other sites of early pigmentation/ hyperpigmentation can include
  - Lips
  - Fingertips
  - Nipples
  - Umbilicus
  - Axillae
  - Anal orifice

THE COLORATION OF SUPERFICIAL PIGMENTATION EXAMPLE CAFÉ AU LAIT IS DIFFERENT DEPENDING ON THE BACKGROUND PIGMENTATION

CAFÉ AU LAIT

- White infants require a Woods lamp to see lesions early on
  - May not be visible with naked eye until exposure to UV light
- Whereas children of color have visible lesions quickly
  - Lesions start darker than the normal skin tone
  - Eventually background skin increases in color
- Lesions seen before the age of 2 years are usually congenital

THE COLORATION OF SUPERFICIAL PIGMENTATION EXAMPLE CAFÉ AU LAIT IS DIFFERENT DEPENDING ON THE BACKGROUND PIGMENTATION

CAFÉ AU LAIT

CARAMEL MACCHIATO

- White infants require a Woods lamp to see lesions early on
  - May not be visible with naked eye until exposure to UV light
- Whereas children of color have visible lesions quickly
  - Lesions start darker than the normal skin tone
  - Eventually background skin increases in color
- Lesions seen before the age of 2 years are usually congenital

THE COLORATION OF SUPERFICIAL PIGMENTATION EXAMPLE CAFÉ AU LAIT IS DIFFERENT DEPENDING ON THE BACKGROUND PIGMENTATION

CAFÉ AU LAIT

CARAMEL MACCHIATO

CARAMEL ROAST

- White infants require a Woods lamp to see lesions early on
  - May not be visible with naked eye until exposure to UV light
- Whereas children of color have visible lesions quickly
  - Lesions start darker than the normal skin tone
  - Eventually background skin increases in color
- Lesions seen before the age of 2 years are usually congenital

Nanette Silverberg

THE COLORATION OF SUPERFICIAL PIGMENTATION EXAMPLE CAFÉ AU LAIT IS DIFFERENT DEPENDING ON THE BACKGROUND PIGMENTATION

CAFÉ AU LAIT

CARAMEL MACCHIATO

CARAMEL ROAST

ESPRESSO

- White infants require a Woods lamp to see lesions early on
  - May not be visible with naked eye until exposure to UV light
- Whereas children of color have visible lesions quickly
  - Lesions start darker than the normal skin tone
  - Eventually background skin increases in color
- Lesions seen before the age of 2 years are usually congenital

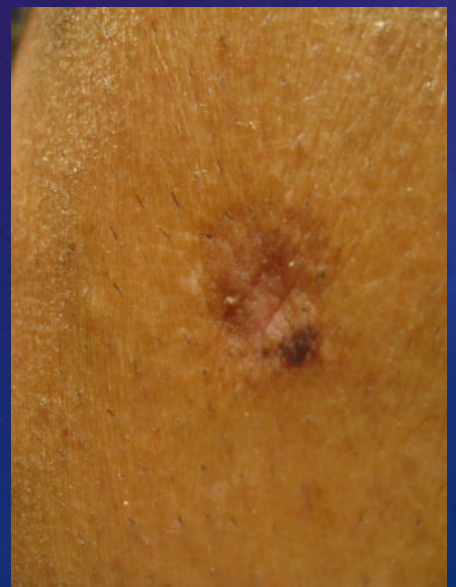
NEVI ARE DARKER IN DARK CHILDREN

Clinical pearl:
Crank up the magnification on
Dermoscopy to see the underlying
Pigment pattern

NEVI IN CAUCASIAN KIDS
MUCH LIGHTER TAN COLOR

Irregularity can be
Subtle and obscured
By background color
Include violaceous
as a color

Severely dysplastic nevus
In a Hispanic Fitz 5 skin→



Benign medium
sized CMN in a
LatinX infant
VERY DARK BROWN
←

Nanette Silverberg
© 2025

CAN MIMIC LICHENIFICATION

Nanette Silverberg

VITILIGO

- The most common acquired depigmenting disorder
- Selective destruction of melanocytes
- 0.1%-2.16% of the worldwide population/ 1.4% US
- Highest incidences recorded are in ethnic skin patients in India (up to 8.8%), Mexico (up to 4%) and Japan (1.68%)
- Childhood-onset vitiligo (before 12 years of age)
- 32%-37% with vitiligo, male= female
- Non-segmental (NSV-generalized) and segmental vitiligo (SV)
- More obvious in darker children
- Periorificial, intertriginous, extremities
  - Mitchell K. Pediatr Dermatol 2021; 38 (S2): 20-29.

RARE FORMS OF VITILIGO ARE SEEN IN DARKER PATIENTS

- HYPOCHROMIC VITILIGO

TRICHROME VITILIGO

- FOLLICULAR VITILIGO

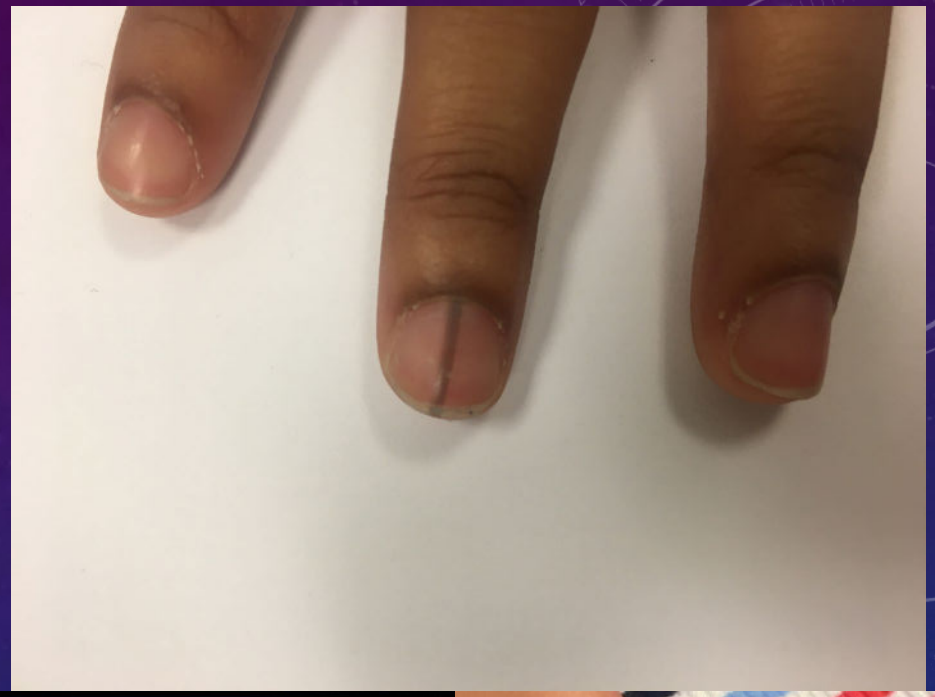
Nanette Silverberg

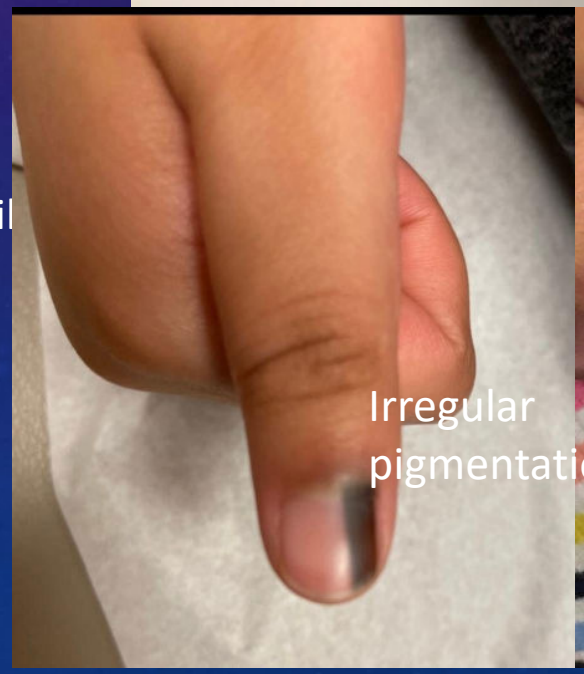
POSTINFLAMMATORY HYPOPIGMENTATION IS A LEADING CAUSE OF OFFICE VISITS IN SOC

- Very common in children of darker skin types with AD
- Fitzpatrick 3-5
- May be indicative of co-existing seborrheic dermatitis
- Resolves spontaneously after treatment of the dermatitis
- Requires 3-6 months for repigmentation
- Warn parents that when the erythema resolves, the hypopigmentation resultant is NOT from topical corticosteroids
- Other types in early childhood: pityriasis alba

LONGITUDINAL MELANONYCHIA

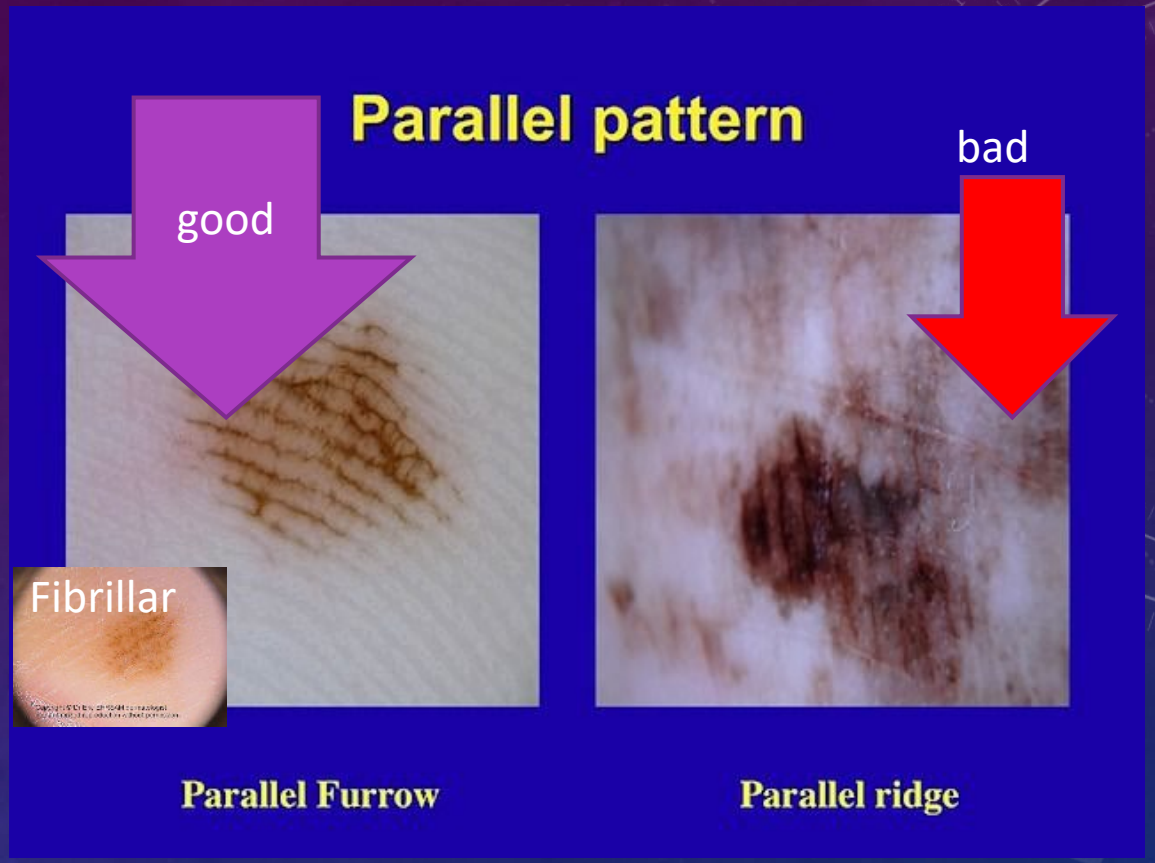
- Melanonychia striata- melanocytic hyperplasia or increased melanocyte activity vs. Melanocytic nevus of the nail apparatus
- Normal variants in Asian and Black patients
- Reported prevalence in Asian populations is 0.8%
  - Prevalence in Black patients not well understood
- Atypical features: “abrupt onset after middle age, personal or family history of melanoma, rapid growth, darkening of a melanonychia band, pigment variegation, blurry lateral borders, irregular elevation of the surface, a bandwidth >3 mm, proximal widening, associated nail plate dystrophy, single rather than multiple digit involvement, and periungual spread of pigmentation onto the adjacent cuticle and/or proximal and/or lateral nail folds (Hutchinson sign)
- RECENT DATA SUPPORTS THE RARITY OF MELANOMA IN DARKER CHILDREN WITH MELANONYCHIA
  - Leung AKC. *Int J Dermatol*. 2019; **58**(11): 1239- 1245.
  - Mitchell K. Pediatr Dermatol 2021; 38 (S2): 30-36.

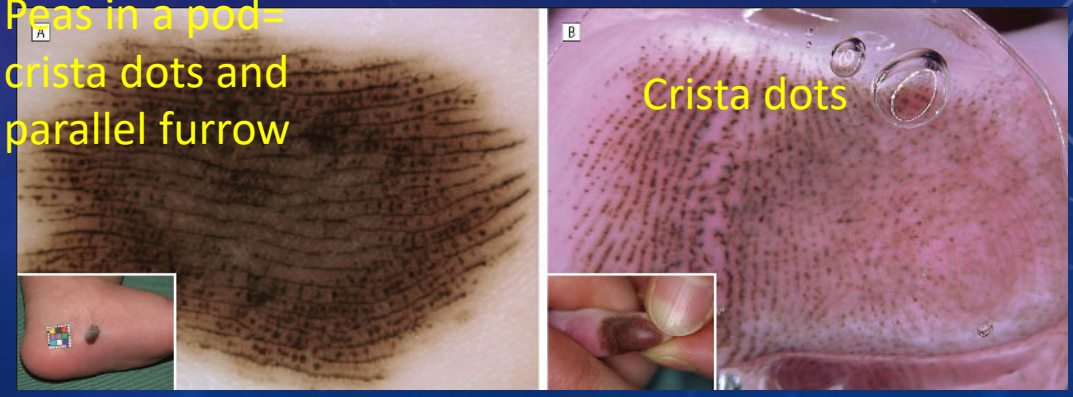




ACRAL NEVI

- Pigmented nevi of the palms and soles are common in skin of color
  - Spain (age 1-15) reported a 19.4% prevalence of acral nevi
  - Sweden 6.5% and
  - Columbia 42%
  - 1106 Colombian school children found the frequency of acral nevi was directly proportional to degree of pigmentation\
- On dermoscopy, the parallel pigmented furrow was the most common pattern in all age groups, while patterns such as fibrillary or non-typical patterns were more prevalent in children than adult
- When stratifying by age, the parallel furrows were more prevalent in children ages 0-12 years old, and the non-typical pattern was more common in adolescents aged 13-18 years
- In a recent Japanese study, acquired acral nevi in children and adolescents were more likely to show the “peas-in-a-pod” (parallel pigmented furrow plus crista-dotted; also characteristic of acral congenital melanocytic nevi) and fibrillar pattern
  - In 62% of cases, a combination of parallel furrow and crista-dotted pattern (peas-in-a-pod) was detected.[59]



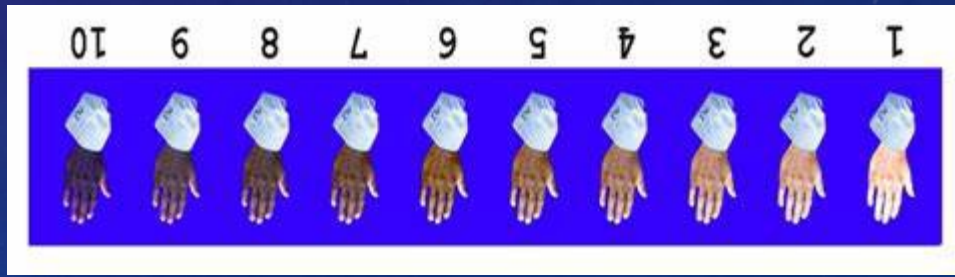


https://jamanetwork.com/journals/jamadermatology/fullarticle/1105136

DIFFERENCES IN CLINICAL APPEARANCE OF INFLAMMATORY SKIN DISEASE- ATOPIC DERMATITIS

- Dennie Morgan fold about 50% Black patients
- More pronounced post-inflammatory pigmentary alteration
- Erythema is less pronounced
- Lichenification very common
- Lichenoid and Follicular variants more common
  - Silverberg NB. Atlas of Cutaneous Biodiversity. Springer 2013
  - Torrelo A. JEADV 2014 May;28 Suppl 3:2-4.

Massey-Martin reminiscent?



MORE TYPES OF AD SEEN IN DARKER PATIENTS

Nummular

Lichenoid

ATOPIC DERMATITIS- EMERGING DATA

- 260 children
- 73%+ of color
- 73.1% Fitz III+
- Itch severity in follicular eczema was as severe as widespread lichenified disease
- 40% of children with undertreated disease have non-classical morphologies
    - Luu M. PeDRA Annual Meeting, November 4, 2022

Pediatric Atopic Dermatitis: Assessment of Burden Based on Lesional Morphology

Minnelly Luu, MD, Lucia Z. Diaz, MD, Yvonne E. Chiu, MD, Amy J. Theos, MD, Smita Awasthi, MD, Christine T. Lauren, MD, Lucia Seminario-Vidal, MD, PhD, Kari Martin, MD, Nanette B. Silverberg, MD, Sharon A. Glick, MD, Wynnis L. Tom, MD

[1]Children's Hospital Los Angeles and University of Southern California
[2]Dell Children's Medical Center
[3]Medical College of Wisconsin
[4]University of Alabama at Birmingham
[5]University of California, Davis
[6]Columbia University
[7]University of South Florida
[8]University of Missouri, Columbia
[9]Icahn School of Medicine at Mt. Sinai
[10]State University of New York Downstate Health Sciences University
[11]University of California, San Diego and Rady Children's Hospital

Background

- Atopic dermatitis (AD) skin lesions range from classic eczematous plaques to small follicular papules to nummular and/or predominantly lichenified lesions, but there is a paucity of data on how lesional morphology contributes to burden of disease.
- We hypothesize that some morphologic subtypes may have under-recognized burden as a result of having fewer of the key features measured by traditional severity scores, particularly erythema and weeping; meanwhile, it is unclear if subtypes consisting of smaller individual lesion size have greater or less impact for the patient.

Methods

- We performed a prospective study of children ≤17.7 years of age with untreated, minimally, or inadequately treated AD with still representative skin lesions. Morphologic features, disease severity, and patient-reported itch severity and quality of life (QOL) were assessed. A subgroup of children with recalcitrant AD being considered for systemic treatment was also enrolled to assess morphologies with prolonged severe disease.

Demographics

260 subjects were enrolled:

Clinical Variables	Subjects
Age, mean (range)	5.3 years (0.2-17.7)
Gender	
Female	125 (48%)
Male	135 (52%)
Ethnicity, n (%) – could choose multiple	
Non-Hispanic White	70 (26.8%)
Hispanic White	83 (31.8%)
Black	80 (30.7%)
Asian/Pacific Islander	71 (27.2%)
American Indian/Alaskan-Native	5 (1.9%)
Skin Type	
I	18 (5.9%)
II	52 (20.0)
III	65 (25.0)
IV	55 (21.2)
V	53 (20.4)
VI	17 (6.5%)
Disease Status	
Untreated AD	46 (17.7%)
Minimally-treated AD (Class 5-7 TCS or TCI)	95 (36.5%)
Inadequately-treated AD (Class 1-4 TCS)	83 (31.9%)
Severe recalcitrant AD	36 (13.8%)
Total BSA affected, mean (range)	
Untreated/Minimally/Inadequately	26.6% (1.0-95.0%)
Severe recalcitrant	29.4% (3.0-90.0%)
EASI score, mean (range)	
Untreated/Minimally/Inadequately	11.0 (0.3-54.0%)
Severe recalcitrant	21.6 (3.2-46.5)

Results

Untreated/Minimally/Inadequately-Treated AD

Predominant Morphology	Classic Eczematous N=189 (62%)	Follicular N=22 (10%)	Nummular N=32 (14%)	Focal Lichenified N=14 (6%)	Large Plaque Lichenified N=13 (7%)	p-value
EXTENT AND SEVERITY: mean values						
Predom. Morphology BSA	26%	23%	8%	12%	21%	0.015
Total BSA involved	30%	34%	12%	16%	24%	0.482
EASI score	13.1	6.8	7.7	9.0	9.8	0.056
Investigator Global Severity	2.9	2.2	3.0	3.1	3.3	0.089
ItchyQuant Score	6.8	6.1	6.6	6.4	6.7	0.782
OTHER ATOPIC CONDITIONS:						
Asthma	44%	22%	3%	29%	3%	<0.001
Allergic rhinitis	57%	5%	17%	13%	4%	0.770
Food allergy	67%	7%	12%	10%	5%	0.542
QUALITY OF LIFE: higher values equate to greater impact						
CDLQI (≥4yrs)/ IDLQI (≤3yrs)	10.4/10.9	8.9/7.4	12.0/9.2	9.8/12.3	14.2/11.6	0.140/ 0.286
Embarrassed/self-conscious/upset	1.7	2.4	1.4	1.7	1.1	0.524
Affects clothing/shoes worn	1.9	2.4	1.8	1.7	0.7	0.233
Affects going out, playing, hobbies	2.1	2.5	1.9	1.6	2.1	0.057
Affects schoolwork	3.4	3.5	3.0	3.0	2.0	<0.001
Trouble from name-calling, teasing, bullying, asked questions, or avoided	2.7	2.6	2.7	1.9	1.7	0.023
How much sleep affected (≥4yrs)	1.8	2.0	1.8	1.5	0.9	0.287
Average time to sleep (≤3yrs)	1.6	1.5	1.9	0.7	1.8	0.047
Total time sleep disturbed (≤3yrs)	1.7	2.1	2.3	1.3	1.7	0.438
How much of a problem treatment for the skin has been	1.7	1.5	1.4	1.8	1.4	0.613

Severe Recalcitrant AD

Predominant Morphology	Classic Eczematous	Follicular	Nummular	Focal Lichenified	Large Plaque Lichenified
One with overlap of multiple morphologies	N=26 (72%)	N=1 (3%)	N=0 (0%)	N=4 (11%)	N=4 (11%)

Notable Findings

- There was no significant difference in itch severity despite individual lesions being small to pinpoint in the follicular subtype and 10-15% less body surface involvement in those with predominantly nummular or focal lichenified lesions.
- Those with nummular and focal lichenified morphologies reported slightly less impact on going out, playing, or doing hobbies, but reported almost as much trouble with other people calling names, teasing, asking questions, or avoiding them.
- Older children with broadly lichenified lesions did not report as much sleep disturbance, but parents of infants with this morphology noted increased disturbance and time to fall sleep.

Conclusions

- Classic eczematous lesions are more common, but almost 40% of children with minimally/inadequately treated disease have other predominant morphologies.
- All morphologies are associated with notable itch, including the follicular subtype.
- There are some differences in how QOL is impacted, but all report some negative impact.

Selected References

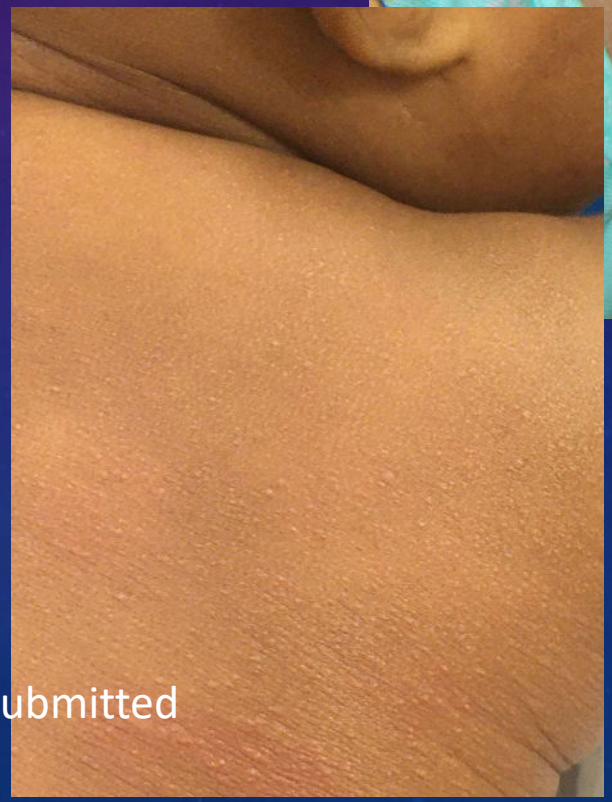
1. Julián-Gónzalez RE, Orozco-Covarrubias L, Durán-McKinster C, et al. Less common clinical manifestations of atopic dermatitis: prevalence by age. Pediatr Dermatol 2012; 29:580-3.
2. Torrelo A. Atopic dermatitis in different skin types: what is to know? JEADV 2014; 28 (s3): 2-4.
3. Mei-Yen Yong A, Tay YK. Atopic Dermatitis: Racial and Ethnic Differences. Dermatol Clin 2017; 35(3):395-402.
4. Drucker AM, Wang AR, Li WQ, Sevetson E, Block JK, Qureshi AA. The Burden of Atopic Dermatitis: Summary of a Report for the National Eczema Association. J Invest Dermatol. 2017 Jan;137(1):26-30.

This study was supported by grant funding from the National Eczema Association and PeDRA.

National Eczema Association
PeDRA Pediatric Dermatology Research Alliance

FOLLICULAR AD- A CASE SERIES

- 10 children
  - 4 Black
  - 2 Southeast Asian
  - 1 Caucasian
  - 2 unreported background
- Age 5 mo-15 years (Average 6.6 years)
- Follicular eczema morphology
  - Chest 5
  - Back 5
  - Legs 3
  - 5 had classical AD additionally
- Pruritus Severe in 4, Mild in 4
- Therapy
  - 5 Class 2 steroid
  - 4 Class 3 steroid
  - 1 dupilumab
    - Weingarten MA and Silverberg NB. submitted



GREATER PREVALENCE → GREATER BURDEN

FOR YEARS TO COME….

- In the US today, Black and Hispanic children have a higher prevalence of AD
- Similar data is noted for Black children in the UK
- More severe disease, more persistent disease
- More children today, will mean generations of greater numbers of Black patients with AD
- Need for modification in scoring systems to account for standard subvariants of color
  - Mitchell K. Pediatr Dermatol 2021; 21(S2):30-36

URTICARIA PIGMENTOSUM IN BLACK CHILDREN

- Delays in diagnosis
- Multiple diagnostic mimics:
- Maculopapular eruption
- Dermatofibroma
- Tinea capitis
- Café au lait macules
- Lentigines

- Markeson C. JAAD Case Rep. 2023 Mar 15;38:105-107. PMCID: PMC10372046.
- Ibad S. Polymorphous Appearance of Mastocytosis in African American Children, under review

WHAT IS ERYTHEMA?

- Synonyms: Hyperemia (Redness- vernacular)
- Brown can be made by mixing red +green, or blue+ red+ yellow, or purple and yellow
  - Brown pigmentation is made more purple by the presence of erythema
  - Erythema can be minimized by the brown hue due to blending of pigments
- Erythema is an important component of many pediatric skin conditions
  - Inflammatory Skin Diseases (e.g. Atopic dermatitis)
  - Vascular Malformations/ Birthmarks (covered elsewhere)
  - Cutaneous Infections
    - Localized: Impetigo, Tinea Corporis (non-blanching erythematous plaques)
    - Generalized: Staph Scalded Skin Syndrome, Kawasaki's, Multisystem Inflammatory Syndrome in Children (MIS-C) (often blanches with pressure)

EXAMPLE IMPETIGO

Fitzpatrick 5

Fitzpatrick 4

Fitzpatrick 3

SALMON COLORED IN WHITE =TAN BROWN IN DARKER SKIN TONES

NEVUS SEBACEUS

PITYRIASIS ROSEA

https://www.aad.org/public/diseases/a-z/pityriasis-rosea-symptoms

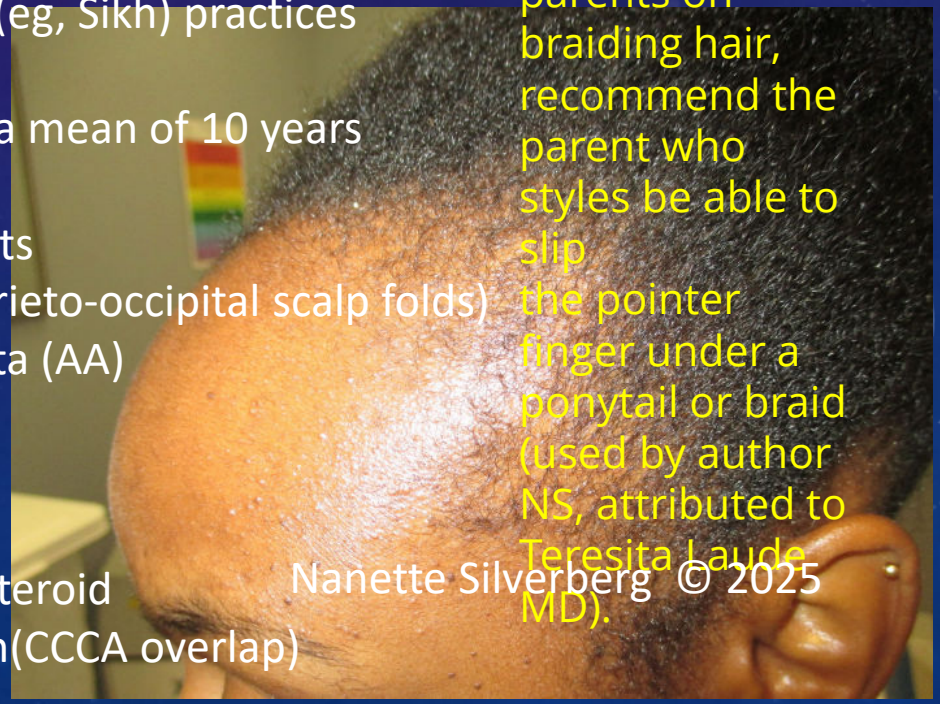
BIOLOGICAL DIFFERENCES- HAIR FOLLICLE

- Hair counts lower in Asian< Black/ White
- Hair follicle curves in Black
- African hair- retrocurvature due to asymmetric diff'n of precortex
  - Increased hair permeability to water
  - More lipids, lower order bilayer
  - Lower cysteine disulfide bond content
  - Retrocurvature promotes ingrown hairs especially with shaving
  - More risk of damage from traction due to asymmetric transfer of forces
- Caucasian hair
  - Higher water absorption capability with increasing humidity but with a slow diffusion rate
  - More ordered lipids; higher water content
- Asian fibre appeared to be more resistant to hydration changes
  - Oliver MA. Skin Res Technol. 2020 Sep;26(5):617-626.
  - Thibaut S. Br J Dermatol 2005; 152: 632

1	Encourage hairstyle options that are not tight or painful
2	Natural hairstyles are encouraged
3	Loose, lightweight twists are often safe alternative hair styles
4	Avoid chemical relaxers
5	Avoid hairstyles that pull or tug on the hair
6	Especially avoidance of the combination of traction and relaxers
7	Avoid weighty extensions by choosing light fibers, loose weaving, shorter lengths and avoidance of additional hair adornments (ie, heavy beads) that weigh the hair down
8	If extensions or braids are worn, un-relaxed hair has been demonstrated to be in a lower risk category as opposed to the high-risk category like extensions/braids on relaxed hair

TRACTION ALOPECIA

- Caused by pulling
- Follicle curvature and coiled hair follicular attachment
- TA is common in young girls of color
  - Black, LatinX, Asian, and Indian
  - 32% adult female and 22% girls with Afro-textured hair
- Tight ponytails, buns, braids, cornrows, and extensions
- Cultural (eg, braiding) and religious (eg, Sikh) practices
- Chinese women with tight ponytails
  - Average of 4 days a week over a mean of 10 years
- Dermoscopy:
  - Pseudo-nits, yellow or black dots
  - Jacquet's sign (formation of parieto-occipital scalp folds)
- Patchy loss can mimic alopecia areata (AA)
- Therapy:
  - STOP THE MADNESS
  - Topical or oral minoxidil
  - Topical or intralesional corticosteroid
  - Oral abx or boggy inflammation(CCCA overlap)



Pearl:
•When counseling parents on braiding hair, recommend the parent who styles be able to slip the pointer finger under a ponytail or braid (used by author NS, attributed to Teresita Laude, MD).

THE END