

Jillian F. Rork, MD¹; Lindsay McCormack, MS²; Karan Lal, DO, MS³; Karen Wiss, MD³⁻⁴; Leah Belazarian, MD³⁻⁴

(1) Department of Dermatology, Dartmouth Medical School; (2) University of Massachusetts Medical School; (3) Department of Dermatology, University of Massachusetts; (4) Department of Pediatrics, University of Massachusetts

Background:

- Down syndrome is one of the most common chromosomal abnormalities and affects multiple organs including the skin.
- The current literature on dermatologic conditions associated with Down syndrome is limited.
- There is often emphasis on rare dermatologic conditions and incongruent conclusions on more common skin disorders.¹⁻⁶

Objective:

- We sought to evaluate dermatologic conditions in patients with Down syndrome diagnosed and managed by dermatologists

Design/Methods:

- This was a retrospective analysis of 101 patients with Down syndrome seen by the University of Massachusetts Dermatology Department between 2008 and 2018.

Table 1. Patient demographic and baseline characteristics

Characteristics	Patients (N = 101)
Age at first visit, years	
Range	0.4 – 66
Mean (SD)	19.7 (15.9)
Median (q1, q3)	16 (8, 24)
Age category at first visit (years), N (%)	
<1	3 (2.9)
1-4	10 (9.9)
5-12	25 (24.8)
13-17	23 (22.8)
18-24	16 (15.8)
>=25	24 (23.8)
Sex, N (%)	
Male	62 (61.4)
Female	39 (38.6)
Race, N (%)	
White	66 (65.3)
Black or African American	9 (8.9)
Asian	4 (4)
Other	20 (19.8)
Unknown	2 (2)
BMI weight categorization, N (%)	
Underweight	1 (1.1)
Healthy	23 (26.4)
Overweight	18 (20.8)
Obese	45 (51.7)
Missing	14 (13.8)
Down syndrome BMI percentile* (n = 57)	
Median (q1, q3)	69 (40, 90)
Mean (SD)	61.8 (31.5)

Results:

- A total of 59 dermatologic diagnoses were identified.
- Eczematous dermatitis, alopecia areata, and xerosis, were the most common diagnoses in age category 0-12 years; hidradenitis suppurativa, folliculitis and seborrheic dermatitis from 13-17 years; folliculitis, seborrheic dermatitis, and xerosis from 18 years and older.
- In those patients with hidradenitis suppurativa, 68.2% were obese and 18.2% were overweight by CDC guidelines with a median Down syndrome BMI percentile of 77%.
- Other notable diagnoses included onychomycosis, tinea pedis, psoriasis, and cheilitis.
- Malignant cutaneous tumors were present in two patients over 50 years of age including basal cell carcinoma and malignant melanoma in situ.
- Overall, dermatologic conditions on the scalp were reported in 41.6%, groin/buttocks in 39.6%, thighs in 23.8%, armpits in 20.8%, and feet in 14.9%.

Discussion:

- Dermatologic conditions in patients with Down syndrome vary by age, but are most often adnexal and eczematous disorders.
- Clinicians should not overlook 'hidden spots' including the scalp, armpits, groin, buttocks, thighs, and feet as these are locations of more common skin conditions including alopecia areata, seborrheic dermatitis, folliculitis, hidradenitis suppurativa, and fungal infections.



Figure 1. Scalp dermatologic conditions in Down syndrome. Alopecia areata in a 6-year-old male (A). Seborrheic dermatitis on the frontal scalp in a 10-year-old female (B).



Figure 2. Adnexal disorders in Down syndrome. Folliculitis on the anterior thigh in a 12-year-old female (A). Pityrosporum folliculitis on the back in a 13-year-old male (B). Hidradenitis suppurativa in the axilla of a 16-year-old female (C). Hidradenitis suppurativa in the groin of a 15-year-old male (D).



Figure 3. Xerosis and cheilitis in Down syndrome. Hand xerosis in a 24-year-old male (A). Hyperkeratosis of the extensor knee in a 21-year-old male (B). Hand xerosis in a 21-year-old male (C). Cheilitis in a 12-year-old female (D).



Figure 4. Fungal infections in patients with Down syndrome. Onychomycosis in a 13-year-old male (A) and 6-year-old female (B). PAS of toenail clippings were positive for hyphae in both patients and culture positive for *Trichophyton rubrum* in patient B. Tinea pedis in patient B (C).

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