diagnosed during the study period, and 19 patients had known cases and came for follow-up (Supplemental Fig 1; available at https://doi.org/10.17632/9cmt5p4cgs.2).

All of the patients presented with skin lesions similar to those of the mucocutaneous type of PV. Previously treated patients with positive serology results for both desmogleins had a more severe and persistent phenotype. There was no significant association of sex, age, and localization of lesions with autoantibodies titers (Supplemental Table I; available at https://doi.org/10.17632/x9tty9shkp.2).

Yoshida and colleagues[1] first described cPV in a series of 4 patients who had a higher titer of Dsg1 compared with Dsg3. They proposed that an extended Dsg compensation hypothesis could explain this presentation. In most studies of cPV, the level of anti-Dsg1 was higher than that of Dsg3, but several reports are not explained by the compensation theory as a rule.

Further experimental studies have shown the coexistence of pathogenic and nonpathogenic epitopes of Dsg3 in murine models of PV.[3] Furthermore, Masmoudi and colleagues[4] proposed that the anti-Dsg3 antibodies in patients with cPV fail to recognize the main antigenic epitopes (EC1 and EC2). In a clinical study, it was shown that the pathogenic potential of autoantibodies differs between patients because of the mixed pathogenic and nonpathogenic forms of autoantibodies.[5]

cPV seems to be more frequent than previously reported. This type mainly presents with cutaneous lesions similar to the mucocutaneous type of disease. The desmoglein compensation theory cannot describe the clinical phenotype and anti-Dsg profiles of these patients. Pathogenic heterogeneity of anti-Dsg antibodies, as well as genetic factors, may be responsible for the presentation of PV with only cutaneous lesions. Further studies are needed to compare the features of cPV to those of mucocutaneous pemphigus.

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Efficacies and merits of the cotton swab technique for diagnosing tinea capitis in the pediatric population

To the Editor: Tinea capitis is the most common dermatophyte infection seen in childhood.[1] The current criterion standard for diagnosing tinea capitis is use of the scrape-culture method to isolate the causative agent.[2] Particularly for young patients, this procedure may be uncomfortable and is rather difficult for physicians to perform.

The cotton swab culture technique may be an efficient and effective way to obtain samples from pediatric patients in whom tinea capitis is suspected. To this date, only one published study has shown that the swab method is as effective as the traditional scrape method.[3] This study, however, was conducted 35 years ago and is not being referred to in clinical practice. We performed a prospective study comparing the efficacy of the swab culture method versus the scrape culture method in the diagnosis of tinea capitis.

Table I. Patient demographics

Patient characteristics	All patients (n = 25)*	Patients with positive results (n = 7)†,‡	Patients with negative results (n = 18)§
Infants (<1 y), n (%)	1 (4.0)	0 (0.0)	1 (5.6)
Children (≥1 and <18 y), n (%)	24 (96.0)	7 (100)	17 (94.4)
Age at collection, *y*, median, interquartile range	3.90 (2.59-5.63)	3.90 (2.61-5.99)	3.74 (2.63-5.59)
Sex, male, n (%)	13 (52.0)	4 (57.1)	9 (50.0)

*Both the scrape and swab methods were conducted.
†Results from both the scrape and swab methods were positive.
‡Dermatophytes isolated included *Trichophyton sudanese* (n = 1), *Trichophyton tonsurans* (n = 2), *Trichophyton violaceum* (n = 3), and *Microsporum audouinii* (n = 1).
§Results from both the scrape and swab methods were negative.

This study was approved by the institutional review board at the McGill University Health Centre. Between July 2017 and July 2019, 25 consenting pediatric patients with suspected tinea capitis were prospectively recruited at the Montreal Children's Hospital and the affiliated Children's Clinic. Participants underwent scrape and swab collection methods, where scale and broken hair samples were obtained. In the scrape method, glass slides were used, such that one slide scraped the scalp and another slide collected scale and broken hairs (Supplemental Fig 1; available via Mendeley at https://data.mendeley.com/datasets/pn9vgghm44/draft?a=04f38381-32d4-4a96-854f-d389842dbe90). Slides were then taped together and transported to the laboratory. The swab culture technique was conducted by moistening a cotton tip applicator with transport media from a routine bacterial transport swab, rubbing the swab over an affected scalp area, and returning the swab in the transport tube (Supplemental Fig 2; available via Mendeley at https://data.mendeley.com/datasets/pn9vgghm44/draft?a=04f38381-32d4-4a96-854f-d389842dbe90). Samples were transported to the hospital laboratory, where they were transferred to Littman and Mycosel Agar for culture.

The majority of patients (n = 24, 96%) recruited were between 1 and 18 years old. Median age at presentation was 3.9 years, and half were males (n = 13, 52%). Overall, there was 100% concordance between the scrape and swab culture methods (Table I). Both endothrix and ectothrix dermatophyte species were isolated.

Our results support evidence that the swab method is as efficacious as the criterion standard. Similar to the study done by Head et al in 1984,[3] we found that results of the swab culture technique were concordant with those of the scrape culture method. Advantages of the swab culture method are multifold. First, swabs are readily available in most clinicians' offices and little expertise and minimal training are required to perform the procedure. Second, the technique is nonthreatening and nontraumatic to the patient. This advantage may increase patient compliance for further evaluation and increase the willingness of family members to undergo culture evaluation for therapeutic purposes.[4] A limitation of the swab technique is that staining with potassium hydroxide or calcofluor to detect dermatophyte presence at the bedside cannot be performed. Nevertheless, it is common for scrape samples to be cultured for dermatophyte speciation, because results may influence patient management. Given the numerous benefits of the swab culture technique, we recommend and support the adoption of this technique to obtain samples in patients with suspected tinea capitis.

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Principal components analysis as a tool to identify lesional skin patterns in cutaneous lupus erythematosus

To the Editor: Principal components analysis (PCA) has the potential to objectively identify clinical patterns of disease expression in dermatologic diseases and help with subgroup classification. PCA is a multivariate analysis that reduces a large set of variables into a smaller group while preserving the original data set. PCA has previously been used to identify significant combinations of clinical signs of Behçet disease as a prominent pattern of disease expression.[1]

We sought to test PCA in cutaneous lupus erythematosus (CLE), which has well-described clinical subtypes.[2] We applied PCA on individual features of the Cutaneous Lupus Disease Activity and Severity Index (CLASI) activity and damage scores (eg, erythema, scaling, dyspigmentation, scarring)[3] in a cohort of patients with CLE to characterize patterns of disease expression. We hypothesizes that PCA would identify significant groupings of disease activity and damage at certain body sites corresponding to known CLE subtypes.

In this cross-sectional study, we recruited 303 patients with CLE who presented consecutively at their initial visits at outpatient dermatology clinics at University of Texas Southwestern Medical Center and Parkland Hospital in Dallas, Texas. One dermatologist (B.F.C.) completed all CLASI scores. We conducted a PCA of CLASI activity and damage component scores using SPSS 25 software (IBM, Armonk, NY). CLE subtypes were not included in the analysis.

Table I summarizes the clinical and demographic characteristics of all patients. For the PCA we extracted 5 factors (F1-F5), which are unobserved constructs formed by sets of observed, correlated variables, using the sum scores method (Fig 1).[4] F1 represented lesions on the anterior neck, chest, abdomen, arms, and back/buttocks, with high CLASI activity scores. Based on the preference for trunk and arms, F1 resembled patients with subacute CLE.[5] F2 showed lesions on the ears and face, with higher CLASI damage scores, whereas the posterior neck, back/buttocks, arms, and legs lesions with high damage scores characterized F3. Because of the predilection for high skin damage, we deduced that F2 and F3 described patients with localized and generalized discoid lupus, respectively.[2] F4 represented hands and feet lesions with disease activity and damage, which favored chilblains lupus clinically. F5 had disease activity and damage in the scalp, as measured by recent scarring and nonscarring

Table I. Demographic and clinical characteristics of patients with cutaneous lupus erythematosus

Characteristic	All patients (N = 303)
Age, mean (SD), y	46 (14.1)
Sex, No. (%)	
Female	256 (84)
Male	47 (16)
Race/ethnicity, No. (%)	
African American	157 (52)
Hispanic	29 (10)
White	101 (33)
Asian	10 (3)
Others	6 (2)
Cutaneous lupus erythematosus subtypes, No. (%)	
Acute	23 (8)
Subacute	45 (15)
Chronic	235 (77)
CLASI component score, mean (SD)	
Activity	6 (6.8)
Damage	6 (6.7)
Disease duration, mean (SD), y	11 (16.3)
Treatment at initial visit, No. (%)	
Topical/intralesional treatment only	100 (33)
Oral antimalarial ± topical/intralesional treatment	40 (13)
Oral immunosuppressants ± antimalarials ± topical/intralesional treatment	163 (54)
Systemic lupus erythematosus diagnosis, No. (%)	
Yes	153 (50)
No	150 (50)
Smoking status, No. (%)	
Current	101 (33)
Past	49 (16)
Never	153 (50)

CLASI, Cutaneous Lupus Erythematosus Area Severity Index; *No.*, number; *SD*, standard deviation.