ABSTRACTS

Revolutionary Ideas in Dermatitis

AMERICAN CONTACT DERMATITIS SOCIETY®
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********* FISHER PRESENTATIONS ********

Abstract Title: Patch Testing to Topical Corticosteroids: Do Corticosteroid Classes Exist? A Retrospective Analysis of 5,637 Patients and 18 Corticosteroids Over 10 Years at Mayo Clinic

Authors and Affiliations: Joyce Y. Chen, BS, James Yiannias, MD, Matthew Hall, MD, Molly J. Youssef, MD, Lisa A. Drage, MD, Mark Davis, MD, Jill M. Killian, Yul Yang, MD PhD

Abstract

Objectives:
Individuals with allergic contact dermatitis to one topical corticosteroid may also react to other corticosteroids. Corticosteroid classification models have been proposed to predict such copositivity, recommend representative screening corticosteroids, and guide allergen avoidance. The objective of this study was to utilize patient data to determine copositivity patterns between corticosteroids and evaluate classification models.

Methods:
A retrospective analysis of the Mayo Clinic Contact Dermatitis Group corticosteroid patch test data was conducted from 2010-2019. Copositivity rates were determined between each pair of corticosteroids, and copositivity patterns were analyzed by hierarchical clustering for comparison to previous classification models.

Results:
49,472 individual patches were applied to 5637 patients, testing 18 corticosteroids. Hypersensitivity ranged between 0.25% and 4.74%. Fluocinonide positivity corresponded to the highest copositivity rate to other corticosteroids (mean (SD): 50.7% (26.1%)). Tixocortol 0.1% and 1% positivity corresponded to the lowest copositivity rate (mean (SD): 4.1% (1.7%) and 3.6% (1.4%), respectively). Hierarchical clustering elucidated patterns that did not support previous corticosteroid classification models.

Conclusions:
Hypersensitivity to topical corticosteroids is rare and difficult to predict, and copositivity rates are variable between corticosteroids. Previously published corticosteroid classifications are not supported by our real patient-derived data. We recommend testing to clinically relevant corticosteroids to screen for allergy, rather than using surrogate corticosteroids such as tixocortol and budesonide. Limitations include limited sample size due to infrequency of corticosteroids. In addition, our data and reported conclusions represent a single institution’s experience.

Abstract Title: Even Low Doses of Systemic Cortisones Affect Patch Testing Results: A Systematic Review

Authors and Affiliations: Penelope Pyoung Kim-Lim, BS, Ebba Wennberg, Megan G. Van Noord, Lauren W. Hastings, Sydney D. Sullivan, Peggy A. Wu, MD MPH

Abstract

Objectives:
We performed a systematic review to evaluate the effect of systemic corticosteroids on patch test results and evaluate the dose threshold and dose-dependence at which patch test reactions are affected.

Methods:
A literature review using the PRISMA methods was conducted in PubMed, Embase, Cochrane Library and Web of Science. Effect of systemic corticosteroids on patch testing was characterized in three groups: retained reaction, diminished reaction, or equivocal result.

Results:
2,568 studies were identified, of which seven were retained, totaling 140 subjects undergoing 167 patch tests. The dose of oral prednisone or equivalent ranged from 5mg to 40mg with heterogeneity in the tested allergens. For patch tests on 5-10mg prednisone (n=6), there were 16.67% (1/6) retained reactions,16.67% (1/6) equivocal reactions, and 66.67% (4/6) diminished reactions. For patch tests on 20mg prednisone (n=100), there were 45% (45/100) retained reactions, 22% (22/100) equivocal reactions, and 33% (33/100) diminished reactions. For patch tests on 30mg prednisone (n=18), there were 44.4% (8/18) retained reactions and 55.6% (10/18) diminished reactions. On 150 mg cortisone acetate (~30mg prednisone), n=7, there were 100% (7/7) retained reactions on patch test. For patch tests on 40mg prednisone (n=36), there were 8.33% (1/12) retained reactions and 91.67% (11/12) diminished reactions.

Conclusions:
There was variability in the effect of systemic corticosteroids on patch test results across different dosages. Although there was a trend towards higher numbers of diminished reactions at higher prednisone (or equivalent) dosing, even low doses had effect on patch test reactions and should be considered during assessments.

Abstract Title: Rates and Causes of Patch Testing Induced Anaphylaxis and Contact Urticaria

Authors and Affiliations: Karishma Daftary, BA, Heidi Bai, Andrew Scheman, MD, Ghazal Ghafari, Walter Liszewski, MD

Abstract

Objectives:
Anaphylaxis and urticaria are known risks of patch testing. This study aims to further understand the frequency of anaphylaxis and which allergens cause anaphylaxis or urticaria.

Methods:
A literature search was conducted on Pubmed to identify reports of anaphylaxis or contact urticaria following patch testing to the allergens in the American Contact Dermatitis Society Core Allergen Series. To estimate the rate of anaphylaxis, expert patch testing dermatologists were surveyed on their number of previous cases.

Results:
In the literature, immediate hypersensitivity reactions from patch testing were reported for 35 of 80 allergens for a total of 495 cases. Five of these were anaphylaxis cases caused by chloroxylenol, chlorocresol, cinnamic aldehyde, or mixed dialkyl thioureas. These five patients had reported previous episodes of anaphylaxis. The remaining 490 cases were urticarial reactions, with the most frequent allergens being fragrances: balsam of Peru (n=197), cinnamic aldehyde (n=28), and fragrance mix 1 and 2 (n=115). The surveyed dermatologists (n=27) had patched 201,720 patients in their combined careers, and two cases of anaphylaxis to fragrance were reported. This yielded an incidence of anaphylaxis of 1 case per 100,860 patients tested.

Conclusions:
Fragrances are the most common causes of patch-induced urticaria. From surveying patch testing dermatologists, we can conclude that anaphylaxis due to patch testing is rare. Although rare, dermatologists should remain aware of this risk and note any patient history of anaphylaxis before testing. One limitation to this study is that the survey was retrospective and allows for the possibility of missed anaphylaxis cases.

Abstract Title: Emerging Allergens in Eyebrow and Eyelash Aesthetics

Authors and Affiliations: Christina Murphy, BA, Katherine K. Brown, MD

Abstract

Objectives:
Recent trends toward fuller eyelashes and eyebrows have increased demand for temporary and permanent cosmetic enhancement of these features in the beauty industry. Evolving cultural practices for eyelash and eyebrow treatments have broadened the categories of allergens to which the periorbital region is routinely exposed. These treatments have gained popularity, thereby increasing community use.
We set out to describe a case of allergic contact dermatitis in a patient allergic to acrylate in false eyelash glue, and to nickel in magnetic false eyelashes which she had begun using as an alternative. We review current practices surrounding eyebrow and eyelash cosmetics with an interest in allergens present.

Methods:
A review of the medical and popular literature describing current cosmetic practices involving the eyelashes and eyebrows and their potential associated contact allergens.

Results:
Current practices for eyebrow enhancement include extensions, lamination (perming the eyebrows), threading, microblading, tinting, tattooing and henna. Popular eyelash cosmetics include extensions (magnetic or adhesion-based), lash lift (perming the eyelashes), tinting and lash line tattooing. Allergens present in these procedures include acrylates and other adhesives used for application, nickel in magnetic extensions, para-phenylenediamine and toluene-2.5-diamine sulfate in dye, as well as others explored in the remainder of this review.

Conclusions:
Evolving and expanding cosmetic procedures for eyebrow and eyelash enhancement introduce new allergens to patients who adopt these practices. Education is needed for patients and clinicians alike so that cases of allergic contact dermatitis may be accurately diagnosed and properly treated with avoidance of culprit allergens.

Abstract Title: Analysis of Formaldehyde Content in Eyelash Glues

Authors and Affiliations: Michelle Xiong, BS, Javed A. Shaik, Sara Hylwa, MD

Abstract

Objectives:
We aimed to investigate formaldehyde presence in commercially available eyelash glues and professional eyelash extension glues marketed as formaldehyde-free using the chromotropic acid method (CAM) of testing.

Methods:
Seventeen false eyelash glues were purchased at random at local commercial retailers; of these, 15 were advertised as formaldehyde-free and/or did not declare formaldehyde. Five professional eyelash extension glues were identified based on use in local eyelash extension studios and all were advertised as formaldehyde-free and/or did not declare formaldehyde. Eyelash glues were tested using standardized CAM procedures. Testing was repeated for questionable color changes or positive findings.

Results:
The two products declaring formaldehyde resulted in a deep purple color change. Of the 15 commercially available eyelash glues advertised as formaldehyde-free, 2 (13.3%) were found to release formaldehyde; they were clear eyelash glues, and notably the “dark” versions were tested and found to be negative. Of the 5 professional eyelash glues tested, 2 (40%) were found to release formaldehyde.

Conclusions:
Continued analysis of eyelash glues is needed. Although eyelash glues may not declare formaldehyde in its ingredients, formaldehyde may still be detected. When counseling formaldehyde-allergic patients on allergen avoidance, providers should be aware eyelash glues may contain formaldehyde.

Acknowledgements:
This study is supported by an ACDS Clinical Research Award.

Abstract Title: Development of a Patch Test Clinical Data Registry Based on a National Perspective

Authors and Affiliations: Anisha Mittal, James G. Marks, Jr., MD, Melissa Butt, Jocelyn Simmers, Alexandra Flamm, MD

Abstract

Objectives:
Clinical data registries (CDRs) have become an evolving method to store data for quality improvement, research, and education, particularly in regards to patch testing; however, multiple formats for CDRs exist. Given this, we created a national survey to gain perspectives on the most efficacious way to create a CDR, particularly for patch testing.

Methods:
A survey was distributed to departments nationally to inquire about CDR use. Information collected included departmental demographics and details regarding what types of CDRs were used, what format information was collected, and barriers experienced in creating and maintaining CDRs. Input was also obtained through conversations with expert faculty who have developed a CDR and the Chief Medical Information Officer (CMIO) at our medical center.

Results:
Survey responses were obtained from 21 institutions. Of the departments using CDRs (86%; n=18), 83% (n=15) use CDRs in a parallel electronic format such as REDCap or Excel. REDCap pros include limited IT involvement and fast setup, while cons include manual data entry, limited access to data, and greater need for support resources. EMR pros include EMR data integration, greater access to data, and limited need for support resources, while cons include high IT involvement and lengthy setup.

Conclusions:
Our national survey and conversations reveal that REDCap is a popular format for CDRs that involves fast setup with limited IT involvement, as opposed to an EMR based format. This data is helpful in informing the creation of future CDRs, including those for patch testing.

Abstract Title: Trends in Positive Patch Tests to Preservatives and Fragrances in Personal Care Products

Authors and Affiliations: Kelly B. Scarberry, MD, Scott Mahlberg, DO, Susan Nedorost, MD

Abstract

Objectives:
In the last decade, formaldehyde and formaldehyde releasers (FormR) were removed from personal care products by many American manufacturers. We hypothesized that reformulation has changed the relative prevalence of positive patch tests in patients presenting with dermatitis.

Methods:
Patch test results from 1839 patients presenting to a single investigator tertiary referral dermatitis clinic were analyzed. Patients with potential occupational exposure to biocides were excluded. Initial readings occurred on day 4-5 and final readings occurred on day 7. Preservative and fragrance patch test results from January 2002- December 2012 were compared to results from January 2016-December 2021, allowing a four-year washout period following removal of formaldehyde and FormR from many products.

Results:
Positive patch tests (PPT) to formaldehyde remained stable from 2002-2012 to 2016-2021 (7.49% vs 7.50%, p=0.994). PPT for all FormR decreased (3.17% vs 1.14%, p<0.001), with the largest decrease seen in quarternium-15 (8.52% vs 3.20%, p<0.001). PPT of methylisothiazolinone/methylchloroisothiazolinone (MI/MCI) increased (3.90% vs 7.07%, p=0.007). There was also an increase in PPT to fragrance mix I (9.56% vs 21.64%, p<0.001), propolis (3.18% vs 12.11%, p<0.001), and cinnamic aldehyde (2.85% vs 5.91%, p=0.003).

Conclusions:
In those presenting to our contact dermatitis clinic, PPT to FormR has significantly decreased while PPT to fragrances has significantly increased in recent years. In the absence of expansion of allergens included on commercially available patch testing series containing FormRs, sensitivity may decrease for detection of the cause of contact dermatitis as FormR PPT become less prevalent and some allergens not included become more prevalent.

Abstract Title: Nickel Release from Metal Tools in United States Barbershops

Authors and Affiliations: Malina Y. Peterson, Sara Hylwa, MD

Abstract

Objectives:
Hairdressers and barbers are among the top occupations to develop occupationally related nickel allergy. While nickel release has previously been detected in metal items in the hairdressing trade, metal items in the barber trade have not been specifically tested. This study screens for nickel release from metal tools in United States barber trade.

Methods:
192 metal tools from twelve barbershops in St. Paul, Minnesota were tested with dimethylglyoxime test. An employee survey was conducted about each metal tool.

Results:
Nickel release was detected in 10 of 192 metal tools (5.2%). Items with nickel release included 1 of 57 scissors (1.7%), 1 of 32 trimmers (3.1%), 4 of 13 barbershop chairs (30.8%), 3 of 6 cape clips, and 1 of 1 nail clippers.

Conclusions:
Nickel release was detected in items unique to the barber trade. These items should be considered when preventing and assessing occupational nickel allergy in barbers.

Abstract Title: Association Between Dyshidrotic Dermatitis and Metal Allergy: An Evaluation of 1,613 Patch Tests

Authors and Affiliations: Scott Mahlberg, DO, Kelly B. Scarberry, MD, Susan Nedorost, MD

Abstract

Objectives:
Dyshidrotic dermatitis pathogenesis has long been a topic of debate with frequent references in the literature to atopic dermatitis, contact allergic dermatitis, systemic allergy to nickel, hyperhidrosis, fungal, autosensitization referenced variably throughout the literature. We hypothesized that the frequency of dyshidrotic dermatitis will be higher in patients with a history of positive metal allergy tests. The objective of this study is to analyze the relationship between positive patch tests to metals (i.e. cobalt, nickel and potassium) and the association with dyshidrotic dermatitis.

Methods:
1,613 patch test results from a tertiary referral contact allergy clinic were prospectively entered into a centralized database from 2009-2021. Positive tests to metals (cobalt, nickel and potassium), self-reported dyshidrotic symptoms, history of childhood flexural dermatitis, respiratory atopy, sex, and race were extracted from this database. Chi-squared analyses were performed to determine statistically relevant relationships between positive patch tests to metals and presence or absence of dyshidrotic dermatitis.

Results:
The presence of metal allergy was significantly associated with dyshidrotic dermatitis (22.8% vs 10.6%; $p<0.001$). Individually stratifying for specific metal allergy showed significant association with dyshidrotic dermatitis: cobalt (24.2% vs 14.4%; $p=0.010$), nickel (20.6% vs 14.2%; $p=0.029$) and potassium (29.7% vs 14.6%; $p=0.011$). No significant relationships were found between the subgroups: atopy, sex, or race.

Conclusions:
Metal allergy has a significant association with presence of dyshidrotic dermatitis and should be clinically investigated in patients presenting with vesicular dermatitis of the hands. This may help to target patients most likely to benefit from diagnostic and therapeutic trial of a low metal diet.

Abstract Title: Assessment of the Impact of Cates Plot on Patient Comprehension of Patch Test Value

Authors and Affiliations: Yujie L. Liou, DO, Katelyn Urban, DO, Susan Nedorost, MD

Abstract

Objectives:
Patch testing is an impactful diagnostic tool for allergic contact dermatitis (ACD). However, results are not always relevant. For example, a result may be of past relevance and the true diagnosis a mimic of ACD. Despite thorough discussion, patients may not fully comprehend the concepts of past or uncertain relevance at the time of final interpretation. We developed a visual decision aid to help patients anticipate potential outcomes and aimed to measure efficacy.

Methods:
We designed a Cates plot based on compilation of published patch test data. All patients under consideration for patch testing in our dermatitis clinic were asked to participate in the study. Participants were given the Cates plot during the initial consultation, then a survey after the patch test final read to determine Cates plot utility to the patient.

Results:
Preliminary analysis of survey results measured the effectiveness of the decision tool. We found that there was satisfactory patient comprehension of the expected patch testing outcomes with standard discussion prior to seeing the Cates plot. Most patients (76%) found the Cates plot helpful in their comprehension of testing regardless of their final diagnosis or previous patch test experiences.

Conclusions:
We sought to improve quality of patient care for patients undergoing patch testing by increasing understanding of the test and expected outcomes. A visual decision aid, such as a Cates plot, helps patients with comprehension of patch test outcomes in order to better participate in their plan of care.

Abstract Title: High Value Dermatitis Care

Authors and Affiliations: Susan Nedorost, MD

Abstract

Objectives:
Review best practice for high value care of dermatitis High value care achieves the best outcomes at the lowest cost. Dermatitis outcomes are difficult to measure due to poor delineation of cohorts and potential for high patient satisfaction with treatments causing silent adverse effects (e.g. systemic corticosteroids).

Methods:
Relevant Cochrane systematic reviews and recommendations from Choosing Wisely Dermatology, and the Centre for Evidence Based Dermatology in the UK were reviewed.

Results:
Many traditional practices such as use of antihistamines for the itch of dermatitis, and use of emollients to prevent eczema in babies, are not supported by evidence. Critical evaluation of risk and benefit for these treatments, including financial harm and opportunity cost, should be routinely reviewed with patients. Use of antibiotics in stasis dermatitis and atopic dermatitis is controversial, likely due to specific cohorts of these patients where the microbiome plays a causative role.

Conclusions:
Professionalism demands that we put patient outcomes before self -interest. Better delineation of cohorts may be possible as we better classify the mechanisms of dermatitis. For example, systemic contact dermatitis patients may be the cohort who respond to antihistamines, microbiome-driven dermatitis patients may worsen with occlusive emollients or dressings, and patients with Th1 driven contact dermatitis may worsen with dupilumab

Abstract Title: Impact of the COVID-19 Pandemic on Adults with Moderate-to-Severe Atopic Dermatitis in the Dutch General Population

Authors and Affiliations: Angelique Nadine Voorberg, MD, Junfen Zhang, Laura Loman, Marie Louise Anna Schuttelaar, MD PhD

Abstract

Objectives:
The COVID-19 pandemic might disproportionately impact patients with atopic dermatitis (AD). We aimed to investigate associations between COVID-19-related impact and AD severity among adults in the Dutch general population.

Methods:
This cross-sectional study was conducted within the Lifelines Cohort Study. A digital questionnaire was sent out to 135,950 adult participants to collect data on AD in 2020. COVID-19-related variables were collected by regularly sending out questionnaires to 139,735 adult participants between March 2020 and July 2021. Associations between AD severity and COVID-19-related impact were analyzed using binary logistic regression models.

Results:
In total, 53,545 subjects, who responded to the AD questionnaire and at least one COVID-19 questionnaire, were included. Multivariate analysis showed similar COVID-19 infection rates in all groups. Subjects with AD, regardless of disease severity, were more concerned about the COVID-19 crisis and more often chose to not contact a doctor when having health problems. Subjects with mild AD had a higher COVID-19 vaccination rate and more frequently covered mouth and nose in public. Moreover, subjects with moderate-to-severe AD estimated a higher chance of becoming infected and expected a more serious disease course. They were more worried about getting sick and a medication shortage, and tended to take other precautions. They also more often expected, reported, and were more afraid of COVID-19 vaccines side effects.

Conclusions:
The COVID-19 pandemic has a considerable impact on patients with moderate-to-severe AD, highlighting the need of more attention for their overall wellbeing in daily practice during the current pandemic.

Abstract Title: Creation, Implementation, and Assessment of a Multilingual Tool to Direct Self-Removal of Patch Testing by Patients.

Authors and Affiliations: Rubi D. Montejano, Carina Woodruff, MD, Nina Botto, MD

Abstract

Objectives:
Patch testing requires optimal technique and patient counseling over multiple visits. 1,2 Recommendations exist to guide in-office removal of patch testing 3,4 seldomly addressing removal by patients. To address the need for improved patient education 3,5,6,7 and minimize exposures during the COVID-19 pandemic, 8 we created a patient tool to conduct patch testing self-removal.

Methods:
An English and Spanish instructional video depicting patch testing self-removal steps and best practices was shared with intervention group participants. Control group participants received standard counseling. All completed surveys (pre-/post- in intervention group) measuring confidence and knowledge on a Likert Scale. Dermatologists additionally measured adherence to recommendations through a five-category physician assessment (PA). Group characteristics and survey results were compared with chi-square tests and paired/unpaired t-tests, respectively. $P<0.05$ was considered significant.

Results:
Of forty-three participants (20 intervention and 23 control) who were demographically similar, most were female, English-speaking, younger than 50 and Non-Hispanic White. Confidence in performing (pre-M=3.5, post-M=4.5, p=0.0008) and describing (pre-M=3.1, post-M=4.5, p=0.0002) self-removal of patch testing increased in the intervention group but not when these were compared to the control (Mi=4.5, Mc=4.3, p=0.5 and Mi=4.5, Mc=4.6, p=0.8). Knowledge (80 and 100% content questions correct) and adherence (80% achieved max PA score) were high but unchanged after the intervention (pre,post-M=1.8 in Q1, pre,post-M=1 in Q2) and comparing to controls (Mi= 1.8, Mc=1.9, p=0.6 in Q1, Mi,Mc= 1, p=0.3 in Q2, Mi= 0.8, Mc=0.9, p=0.6 in PA).

Conclusions:
Our tool increased confidence in the self-removal process, highlighting its utility to improve communication and outcomes without additional visits.

Abstract Title: Exposure and Work-Related Factors in Subjects with Hand Eczema: Data From the Dutch General Population

Authors and Affiliations: Laura Loman, Marjolein J. Brands, Marie Louise Anna Schuttelaar, MD PhD

Abstract

Objectives:
Hand eczema (HE) is the most frequent occupational skin disease. However, studies on non-occupational wet exposure, occupations not considered as high-risk occupations, and socioeconomic factors are scarce. The objective of this study was to investigate the association between HE and occupational and non-occupational wet exposure and work-related factors in the Dutch general population.

Methods:
Within the Lifelines Cohort Study, participants with HE were identified by a digital add-on questionnaire send out in 2020, including questions regarding exposure. Data on work-related and socioeconomic factors were collected from baseline between 2006-2013.

Results:
Overall, 57 046 participants (42.8%) were included. Occupational and non-occupational wet exposure were positive associated with HE in the past year (Odds Ratios (OR) 1.35 95% confidence interval (CI) [1.22-1.49] and OR 1.34 95% CI [1.17-1.53], respectively). Positive associations for high-risk occupations (nursing and midwifery professionals, and personal care workers in health services), occupations not considered as high-risk (legal, social and religious associate professionals), and higher levels of education were found (OR 1.17 95% CI [1.04-1.32] and OR 1.18 95% CI [1.04-1.34] for middle and high level of education, respectively).

Conclusions:
Preventive strategies for HE should focus on avoidance of all exposure to wet activities, regardless of origin. In addition, job tasks instead of job title should be taken into account. As previous results on the association between HE and socioeconomic factors differ, future research should focus on a uniform definition.

Abstract Title: Patch Testing to Paraphenylenediamine: North American Contact Dermatitis Group Experience, 1994 to 2018

Authors and Affiliations: Erin M. Warshaw, MD, Malina Y. Peterson

Abstract

Objectives:
Paraphenylenediamine (PPD) is an aromatic amine dye and known allergen. This study characterizes the epidemiology of positive patch test reactions to PPD.

Methods:
Retrospective analysis of patients tested to PPD (1% pet) by the North American Contact Dermatitis Group, 1994 to 2018.

Results:
Of 54,914 patients tested to PPD, 3,095 (5.6%) had an allergic reaction. There was a significant increase in PPD positivity from 5.2% (1994-2006) to 6.0% (2007-2018, P value<.0001). Compared to PPD-negative patients, PPD-positive patients had significantly greater odds of age over 40 years (OR 1.55 [95% CI 1.43-1.69]), female sex (OR 1.52 [95% CI 1.41-1.66]), and non-Caucasian race (OR 1.52 [95% CI 1.41-1.67]). The most common primary anatomic sites of dermatitis were face (25.5%), hands (21.9%) and scattered/generalized pattern (15.5%). Over half (55.1%) of reactions were ++ or +++ at the final reading and 60.1% were currently relevant. Common exposure sources included hair dye (73.5%) and clothing/shoes/other apparel (3.9%). 8.3% of reactions were relevant to occupation; the most frequent prevalent occupation was hairdresser/cosmetologist (63.1%). The percentage of PPD-positive patients who were also positive to other allergens is as follows: benzocaine (11.3%), N-isopropyl-N'-phenyl-p-phenylenediamine (6.7%), black rubber mix (5.1%), disperse dye mix (6.5%), and paraben mix (2.1% vs 0.9%).

Conclusions:
Over the last 24 years, positivity to PPD was 5.6%. Most PPD-positive patients were female, over age 40 years, and non-Caucasian. Positive reactions were usually clinically relevant and hair dye was the most frequently identified source.

Abstract Title: Contact Allergens Are Commonly Found In Wound Care Clinic Products At A Single Institution

Authors and Affiliations: Dharmik Patel, MD, Vivek Singam, MD, Keri S. Chaney, MD

Abstract

Objectives:
Given the high rates of contact dermatitis experienced by the patients seen in our Dermatology clinic undergoing concomitant care in the Wound Care Clinic at the Zablocki Veterans Administrations Medical Center in Milwaukee, we investigated wound care products to identify common contact allergens. Current literature posits patients with chronic non healing wounds have a higher risk of developing contact dermatitis.1 Our objective was to determine common contact allergens within various wound care regimens to decrease the frequency and severity of allergic contact dermatitis (ACD).

Methods:
We contacted the Wound Care clinic to create a comprehensive list of most commonly utilized products. We generated a resource of all known ingredients within these products and identified common allergens known to cause ACD according to the North American Contact Dermatitis Group Patch Test Results: 2017-2018.

Results:
Twenty-four products were identified to be commonly used at the Wound Care clinic. Of these, 33.3% (8/24) products were identified to have one or more common contact allergens within them as assessed by an expert clinician practicing patch testing. Common contact allergens included methylisothiazolinone, methylchloroisothiazolinone, fragrance, lanolin alcohol, formaldehyde-releasing preservatives (imidazolidinyl urea and diazolidinyl urea), and propylene glycol.

Conclusions:
Contact allergens are present in many commonly used wound care products, manifesting many instances of severe and prolonged allergic contact dermatitis among patients with non-healing chronic wounds. There is a need for further care coordination and awareness between dermatology and wound care specialists to mitigate the number and severity of these episodes in veteran patients.

Abstract Title: Patch Testing with Glucosides: The North American Contact Dermatitis Group Experience, 2009-2018

Authors and Affiliations: Erin M. Warshaw, MD, Michelle Xiong, BS

Abstract

Objectives:
Alkyl glucosides are nonionic surfactants increasingly used in personal care products. We characterized reaction characteristics, clinical relevance, occupational relevance, and demographics in patients with patch test reactions to decyl glucoside (5% pet, tested 2009-2018) and lauryl glucoside (3% pet, tested 2017-2018).

Methods:
Retrospective analysis of patients tested to decyl and/or lauryl glucoside by the North American Contact Dermatitis Group.

Results:
Of 24,097 patients patch tested to decyl and/or lauryl glucoside, 470 (2.0%) had positive reactions. Compared to glucoside-negative patients, glucoside-positive patients had higher odds of: occupationally related skin condition (13.4% vs 10.1%; p=0.0207), history of hay fever (38.5% vs 31.6%; p=0.0014), atopic dermatitis (39.0% vs 28.6%; p<0.0001), and/or asthma (21.8% vs 16.5%; p=0.0023). Most (52.7%) glucoside reactions were weak (+); 83.9% were currently relevant. The most common source was personal care products (63.0%), especially hair care products (16.5%). Of the 4933 of patients tested to both decyl and lauryl glucoside, 134 (2.7%) were positive. In this subgroup, 43.4% (43/99) of decyl positive patients were also positive to lauryl glucoside and 55.1% (43/78) of lauryl glucoside patients were also positive to decyl glucoside.

Conclusions:
Positive reactions to glucosides occurred in 2.0% of tested patients. Reactions were often clinically relevant and linked to personal care products. Cross-reactivity was common.

Abstract Title: Comparison of Patch Testing Results Among White, Black, Hispanic, and Asian Children

Authors and Affiliations: Katherine Young, BS, MEng, JiaDe Yu, MD

Abstract

Objectives:
Characterize patch testing data from a pediatric allergic contact dermatitis registry, stratifying by race.

Methods:
Retrospective review of patch-tested patients (2016-2021) spanning 13 centers across the U.S.

Results:
Of 513 patients, 62.6% self-reported as White, 13.5% as Black, 11.9% as Hispanic, and 7.8% as Asian (1.0% more than one race, 3.3% did not report). The mean age was 11.3±4.1 years, and 61.8% were female. Compared to Whites, Black patients were less likely to have been tested to a customized allergen panel ($p<0.05$). Asians saw more providers prior to patch testing (1.5) than Whites (1.2, $p<0.05$). There were no statistically significant differences between racial groups in the number of allergens tested, duration of symptoms, or overall positivity rate. The most common allergens were:
White:
1. Hydroperoxides of linalool (31.1% positive, 22.6% relevant)
2. Nickel sulfate (18.6% positive, 9.6% relevant)
3. Hydroperoxides of limonene (16.8% positive, 13.1% relevant)
Black:
1. Hydroperoxides of linalool (23.1% positive, 7.7% relevant)
2. Methylisothiazolinone (19.3% positive, 14.0% relevant)
3. Methylchloroisothiazolinone/methylisothiazolinone (14.5% positive, 11.6% relevant)
Hispanic:
1. Hydroperoxides of linalool (20.0% positive, 20.0% relevant)
2. Hydroperoxides of limonene (19.4% positive, 19.4% relevant)
3. Methylisothiazolinone (18.6% positive, 14.0% relevant)
Asian:
1. Hydroperoxides of linalool (48.0% positive, 44.0% relevant)
2. Hydroperoxides of limonene, (26.9% positive, 23.1% relevant)
3. Propylene glycol (19.4% positive, 12.9% relevant)

Conclusions:
There exist differences in allergen prevalence among White, Black, Hispanic, and Asian pediatric patients. Populations of color comprised 40% of the U.S. population in 2020, underscoring the need for larger studies on patch testing in skin of color.

******** POSTER PRESENTATIONS ********

Abstract Title: Patch Testing to Peppermint Oil: North American Contact Dermatitis Group Experience, 2009 to 2018

Authors and Affiliations: Erin M. Warshaw, MD, Malina Y. Peterson

Abstract

Objectives:
Mentha piperita (peppermint) oil is used in flavorings, perfumes, cosmetics, and tobacco. This study characterizes the epidemiology of positive patch tests to peppermint oil.

Methods:
Retrospective analysis of patients tested to peppermint oil (2% pet) by the North American Contact Dermatitis Group, 2009 to 2018.

Results:
Of 24,092 patients tested to peppermint, 132 (0.5%) had a positive reaction. Most peppermint positive patients were female (77.3%) and/or >age 40 years (70.5%). The most common anatomic sites of dermatitis included face (31.1%; of these 36.6% specified lips), hands (10.7%) and scattered/generalized pattern. Almost a third (30.3%) of reactions were ++ or +++ and 79.5% were currently relevant. The most commonly identified sources included oral hygiene products, foods, and lip products. Co-reaction with at least one other fragrance screening allergen was seen in 81.1% (82/132) of peppermint oil-positive patients; most commonly Cananga odorata oil (54.2%), fragrance mix I (49.5%), Compositae mix (48.6%), balsam of Peru (42.1%), and Jasminum officinale oil (39.7%).

Conclusions:
Ten-year prevalence of peppermint oil allergy was 0.5%. Approximately one-fifth (18.9%) allergies to peppermint oil would have been missed if relying on other fragrance allergens.

Abstract Title: Contact Allergens in Over-the-Counter Topical Antihistamine and Mast Cell Stabilizer Ophthalmic Agents

Authors and Affiliations: Malina Y. Peterson, Erin M. Warshaw, MD

Abstract

Objectives:
Over-the-counter (OTC) topical ophthalmic agents can cause allergic contact dermatitis. Previous ingredient analyses have assessed OTC eye lubricants, contact lens solutions, and vasoconstricting ophthalmic agents. Here we examined potential contact allergens in OTC topical antihistamine and mast cell stabilizer ophthalmic agents.

Methods:
Antihistamine and mast cell stabilizer agents were identified were compiled from a web search (Drugs.com) and ingredients compiled from the National Institute of Health U.S. National Library of Medicine database (dailymed.nlm.nih.gov/dailymed).

Results:
162 antihistamines and 10 mast cell stabilizers eye were included. The most common inactive ingredients were benzalkonium chloride (99.4%), sodium phosphate (55.8%), edetate disodium (46.5%), and glycerin (24.4%). Ingredients included in the American Contact Dermatitis Society Core 90 screening series included benzalkonium chloride (99.4%) and polysorbate 80 (1.2%). Only one formulation (Alaway Preservative Free Solution/Drops) had no core allergens/cross-reactors.

Conclusions:
Almost all formulations of OTC antihistamine and mast cell stabilizer eye drops contained benzalkonium chloride.

Abstract Title: Formaldehyde Release from Pads and Tampons Using the Chromatropic Acid Method

Authors and Affiliations: Malina Y. Peterson, Sara Hylwa, MD

Abstract

Objectives:
Contact allergy to feminine hygiene products has been reported; most commonly from allergens such as colophonium, fragrance, and acrylates. Formaldehyde resins can be used in textiles. Formaldehyde release has been detected in clothing, uniforms, and linens. This study assessed for formaldehyde release in pads and tampons.

Methods:
11 pads and 9 tampons were selected from retailers (n=5) based on popularity. Products were analyzed for formaldehyde release using the chromatropic acid method.

Results:
Formaldehyde release was detected in none (0/20) of the pads and tampons. Positive and negative controls were detected appropriately.

Conclusions:
This study suggests formaldehyde is not released from pads and tampons. Clinicians may counsel patients with formaldehyde allergy that these feminine hygiene products are likely safe to use. Limitations include small sample size.

Abstract Title: From Support Group to Activism: A Blueprint for Change

Authors and Affiliations: Malina Y. Peterson, Michelle Xiong, BS, Melanie Ault, Liz Brodd, Kristi Harvey, Heather Meng, Sara Hylwa, MD

Abstract

Background:
Support groups exist for a range of dermatologic conditions such as alopecia areata, vitiligo, cutaneous T-cell lymphoma, hidradenitis suppurativa, eczema, and allergic contact dermatitis. These groups have been shown to be helpful for coping with disease

Conclusions:
Collaboration between physicians and the community leads to greater capacity for change; support groups may be an effective avenue for collaboration and instigating change in niche diseases.

Acknowledgements:
Contact Dermatitis Discussion Group members

Abstract Title: Clinically Relevant Allergic Contact Dermatitis to Dipropylene Glycol with Lack of Cross-Reactivity to Propylene Glycol

Authors and Affiliations: Malina Y. Peterson, Joohee Han, Erin M. Warshaw, MD

Abstract

Background:
Dipropylene glycol is an emulsifier used in many personal care products. Only one previous case of allergic contact dermatitis to dipropylene glycol has been reported.

Conclusions:
While propylene glycol and dipropylene glycol are both diols, dipropylene glycol contains an ether group and is nearly twice the molecular weight. We have routinely tested to dipropylene glycol on our emulsifier series with rare reactions. The clinical picture, difference in structure and size, and rare incidence of dipropylene glycol reaction suggested dipropylene glycol likely does not cross-react with propylene glycol.

Abstract Title: Allergic Contact Dermatitis from Benzyl Alcohol in Hydrocortisone Cream

Authors and Affiliations: Michelle Xiong, BS, Malina Y. Peterson, Sara Hylwa, MD

Abstract

Background:
Benzyl alcohol is an aromatic alcohol that serves various functions in products, such as fragrance, preservative, and solvent. We describe a case of allergic contact dermatitis to benzyl alcohol in hydrocortisone cream.

Conclusions:
Only a few cases of allergic contact dermatitis in response to benzyl alcohol in medications have been reported. This is the first report of allergic contact dermatitis from benzyl alcohol in hydrocortisone cream and highlights the importance of patch testing patients with worsening dermatitis after use of topical corticosteroids.

Abstract Title: Patch Testing with Benzophenone-3 and Benzophenone-4: The North American Contact Dermatitis Group Experience, 2013-2018

Authors and Affiliations: Erin M. Warshaw, MD, Michelle Xiong, BS

Abstract

Objectives:
Benzophenones are chemical ultraviolet (UV) filters used in personal care items to provide UV protection for consumers and/or prevent photodegradation of products. Here we characterize demographics of patients with positive patch reactions to benzophenone-3 and benzophenone-4, as well as analyze reaction strength, clinical relevance, and sources.

Methods:
Retrospective analysis of patients patch tested to benzophenone-3 (10% pet) and benzophenone-4 (2% pet) by the North American Contact Dermatitis Group, 2013 to 2018.

Results:
Of the 15,555 patients patch tested to both benzophenone-3 and benzophenone-4, 336 (2.2%) had a positive reaction to one or both. Most were female (76.1%) and/or >40 years (65.3%). The most common primary anatomic sites of dermatitis included face (36.7%), scattered/generalized distribution (24.5%), and hands (14.3%). 39.8% of benzophenone reactions were ++ or +++ and 74.4% were currently relevant. The most commonly identified sources included personal care products (60.7%), especially sunscreens (30.4%). 16.0% (13/81) of benzophenone-3 positive patients were also positive to benzophenone-4 and 4.9% (13/268) of benzophenone-4 positive patients were also positive to benzophenone-3.

Conclusions:
Positive reactions to =1 benzophenones occurred in 2.2% of tested patients. Clinical relevance was common and cross-reactivity was rare.

Abstract Title: Allergenic Ingredients in Sunscreens Marketed for Skin of Color

Authors and Affiliations: Michelle Xiong, BS, Erin M. Warshaw, MD

Abstract

Objectives:
Sunscreens marketed to consumers with skin of color (SOC) may differ from traditional sunscreens. We characterized ingredients of sunscreens labeled for SOC.

Methods:
SOC sunscreens were identified via internet search using terms: "sunscreen" with "skin of color," "dark skin," and/or "black skin." SOC sunscreen ingredients were compared to the top 20 best-selling sunscreens on Amazon. Potential allergens were determined using the American Contact Dermatitis Society 2020 Core series (90 allergens).

Results:
12 SOC sunscreens were identified. Prevalence of the most common active ingredients in SOC sunscreens were as follows: avobenzone (58.3%), octisalate (41.7%) and zinc oxide (41.7%). For Top 20 sunscreens, frequent active ingredients included zinc oxide (50.0%), avobenzone (45.0%), octisalate (45.0%), and octocrylene (45.0%). All SOC sunscreens and Top 20 sunscreens contained =1 allergen(s). The most common allergens in SOC sunscreens were fragrance/botanical extracts (83.3%, 10/12), tocopherol (75.0%, 9/12), and benzoates (75.0%, 9/12). In comparison, the most frequent allergens in Top 20 sunscreens were propylene glycol/derivatives (70.0%, 14/20), tocopherol (65.0%, 13/20) and phenoxyethanol (60%, 12/20). Notably, methylisothiazolinone was found in none of the sunscreens for SOC, but in 3 of the top 20 sunscreens on Amazon.

Conclusions:
Sunscreens for SOC contain many potential allergens, especially fragrance.

Abstract Title: Allergic Contact Dermatitis in LGBT Patients

Authors and Affiliations: Anuk Burli, BS, Howard I. Maibach, MD

Abstract

Objectives:
Lesbian, gay, bisexual, and transgender (LGBT) patients face health issues relevant to dermatologists, such as contact dermatitis; however, there is a lack of information surrounding common allergens causing contact dermatitis that disproportionally affect LGBT patients. We aimed to evaluate common sites of contact dermatitis and common allergens that affect the LGBT population.

Methods:
Covidence, Embase, MEDLINE, PubMed, Web of Science, and Google Scholar were searched to identify relevant articles studying allergic and irritant contact dermatitis in the LGBT population.

Results:
Common sites of allergic contact dermatitis in men who have sex with men include the perioral region, cheeks, nasal orifices or upper chest, as well as the anogenital region due to fragrances in lubricants, douches, and lotions (N=4). In transgender individuals, contact dermatitis has been found in the vulvar region due to bacitracin, neomycin, and pramoxine used in gender-affirming surgeries (N=1), as well as the chest due to chest binders used prior to gender-affirming top surgeries (N=273).

Conclusions:
Our literature review demonstrates that certain allergens and body sites affected by allergic contact dermatitis are more common amongst the LGBT community. This can help guide patch testing as a diagnostic tool. Further research must be conducted regarding contact dermatitis in the LGBT population, especially given the lack of data surrounding women who have sex with women. Limitations to our study include the relative lack of literature regarding allergic contact dermatitis in the LGBT patient population.

Abstract Title: Systemic Contact Dermatitis to an Herbal Supplement Containing Gum Mastic in a Colophony-Allergic Patient

Authors and Affiliations: Christina Murphy, BA, Katherine K. Brown, MD

Abstract

Background:
We describe the first reported case of systemic contact dermatitis caused by ingestion of a contact allergen through oral herbal supplementation.

Conclusions:
This is the first reported case of systemic contact dermatitis caused by ingestion of gum mastic, emphasizing the need for clinicians to think broadly about allergens patients may encounter through herbal supplementation.

Abstract Title: Utilization of Product Disclaimers and Their Impact on the Price of Personal Care Products

Authors and Affiliations: Jenna McKenney, Walter Liszewski, MD

Abstract

Objectives:
Product disclaimers are warnings placed on personal care products by manufacturers. These claims are largely unregulated and have the potential to mislead consumers. This study assessed the frequency of products disclaimers, variations in their utilization, and how they may impact consumer prices.

Methods:
A total of 1,935 products were identified at a Target store. For each product, the disclaimers on each product were documented, and the price per ounce was recorded. Product disclaimers were tabulated and compared between groups. To assess an association between price and product disclaimers, a Spearman's correlation was assessed between number of disclaimers and price per ounce.

Results:
1,935 products were identified across 19 categories of personal care products; these goods contained a total of 5,004 disclaimers. 22 recurrent disclaimers were noted, the most common being paraben free (n=800), made in America (n=745), and cruelty free (n=675). The categories most likely to have no product disclaimers were mouthwashes (76.3%), toothpastes (53.6%), and shaving creams (53.1%). Product categories with the highest average number of disclaimers per product were face cleansers (4.1), face moisturizers (3.9), and exfoliants (3.4). Of the 22 categories, only 5 were statistically likely to have a positive association between number of disclaimers and cost, with the strongest being mouthwashes ($rho=0.516$, $p<0.001$) and shampoos/conditioner ($rho=0.402$, $p<0.001$).

Conclusions:
Product disclaimers are common, although they vary among categories of personal care products. Only some products showed a correlation between number of disclaimers and cost, which suggests disclaimers are not always associated with a higher consumer price.

Abstract Title: Three Cases of Systemic Contact Dermatitis Due to Intraoperative Bacitracin Irrigation During Mastectomy and Breast Reconstruction

Authors and Affiliations: Jodi So, BA, Nathalie Suzuki, MD, Jennifer K. Chen, MD, Bernice Kwong, Silvina Pugliese, MD, Golara Honari, MD

Abstract

Background:
Intraoperative bacitracin irrigation (IBI) of surgical sites to prevent infection remains a common practice among surgical teams, despite significant safety concerns associated with bacitracin, including high rates of contact sensitivity identified on pat

Conclusions:
We present the first reported series of SCD associated with IBI. Given the widespread usage of IBI, clinicians should be aware of intraoperative irrigation as an important and potentially underreported route of exposure and consider bacitracin sensitivity in patients with postoperative cutaneous eruptions without a known cause. Surgical teams should consider selecting alternate, less sensitizing agents when choosing intraoperative irrigation solutions to prevent surgical site infections.

Abstract Title: Time for Introspection: The Need for Effective Education in the Nickel Allergic Population

Authors and Affiliations: Jonathan Nichilo, Jason Ohayon, MD

Abstract

Objectives:
Nickel allergic contact dermatitis (Ni-ACD) remains one of the most common contact allergens.1 Despite its frequency, Ni-ACD awareness post-diagnosis remains unstudied. A survey of allergy knowledge in the Ni-ACD population was set out to identify deficiencies.

Methods:
With ethics approval, an 18 question survey was administered by email to confirmed Ni-ACD patients and their caregivers (n=102) after receiving consultation, including ACDS information on Ni avoidance. Ni-ACD was diagnosed based on standardized patch testing (Chemotechnique, Smartpractice) in a community Allergy clinic. Ni allergy knowledge, awareness, and prevention strategies were reviewed.

Results:
Healthcare professionals were the most prevalent source of Ni-ACD information (84%), followed by media sources (23%). Paper sourced literature (72%) were most preferred, followed by email lists (57%), and medical society web pages (57%) to receive updated Ni-ACD information. Despite consultation and provision of Ni allergy information (including ACDS), an average of 36% of the respondents were incorrect or “unsure” in their ability to identify common nickel-containing products and 67% were incorrect or "unsure" about common nickel allergy knowledge for prevention of ACD. Furthermore, 19% answered “unsure” or incorrectly on how best to share their Ni-ACD diagnosis with other medical professionals.

Conclusions:
Despite medical consultation and provision of allergy avoidance and ACDS information, a gap in nickel allergy knowledge remains in diagnosed Ni-ACD patients. Additional education and verification of Ni-ACD knowledge (ie AAP recommendations) are needed to improve medical education and patient confidence in managing their Ni-ACD. Further studies would benefit in identifying the best modalities.

Abstract Title: Allergic Contact Dermatitis to Panthenol in "Hypoallergenic" Products

Authors and Affiliations: Joohee Han, Erin M. Warshaw, MD

Abstract

Background:
Panthenol, pro-vitamin B5, is a rare allergen and may be found in many "hypoallergenic" products.

Conclusions:
Physicians should be aware of the allergenic potential of panthenol allergy and its presence in "hypoallergenic" products.

Abstract Title: Allergic Contact Dermatitis to Parabens in Topical Corticosteroids (Including "Hypoallergenic" Triamcinolone Ointment!!): Definite Relevance to a "Non-Allergen"

Authors and Affiliations: Joohee Han, Alexander Idrogo-Lam, Erin M. Warshaw, MD

Abstract

Background:
We present a case of a clinically relevant contact allergy to parabens.

Conclusions:
Physicians should be aware of the presence of parabens, a rare allergen, in low-allergen corticosteroid formulations.

Abstract Title: Potential Allergens in Feminine Hygiene Products

Authors and Affiliations: Katherine Jicha, Rayad Shams, Aida Lugo-Somolinos, MD

Abstract

Objectives:
Genital allergic contact dermatitis is a rare, yet troubling condition. To our knowledge, ingredients in maxi pads and pantiliners have not been extensively studied as potential contributors. We therefore seek to identify potential allergens in these products.

Methods:
A search for "pantiliners" and "maxi pads" was performed on Walgreens.com, yielding 76 results and 147 results respectively. Generic brands from Walgreens, CVS, Walmart, and Whole Foods were also included. Ingredients were identified online, on packaging, or by contacting the manufacturer. Materials were grouped based on chemical composition, structural similarities, or association with a family of compounds by utilizing CAS numbers and synonyms found in Groot's Patch Testing 4th edition book.

Results:
In total, 59 pantiliners and 111 maxi pads were analyzed, and 136 ingredients were identified. There was an average of 8.8 ingredients per pantiliner and 12 ingredients per maxi pad. The most common compound groups included plastic polymers, adhesives, pigments/colorants, wood pulp, and absorbent gel. These were also found to be the most common allergenic groups. 93.5% of products contained a potentially allergenic ingredient. Fragrance was only found in 14.7% of products.

Conclusions:
Given our results, we theorize that pantiliners and maxi pads may be a significant source of genital allergic contact dermatitis. Currently, only New York requires manufacturers to list ingredients for menstrual products. Numerous products did not have materials listed on the packaging, and it is likely that some brands did not disclose a comprehensive list of ingredients. We identified 11 products which contained no known allergens.

Abstract Title: Mask Dermatitis - Perhaps a New Dermatologic Masquerade Syndrome?

Authors and Affiliations: Larissa M. Pastore, BS, Domenic J. Pastore

Abstract

Background:
The COVID-19 pandemic has fostered many new patterns of behavior. One of the more popular strategies has been facial mask wearing. Outbreaks of skin reactions secondary to mask wearing have been commonplace findings in outpatient primary care offices and

Conclusions:
Facial mask wearing has been extensively utilized throughout the COVID-19 pandemic. The classic mask is made of polypropylene, a non-woven fabric which is an effective barrier for transmission of viruses and other microorganisms (1). Materials such as cotton and polyester are also used. Some masks even contain copper and trace metals , so it is not unusual that ubiquitous mask wearing would increase the incidence of facial dermatoses (2). What we have observed is that these new facial eruptions have mimicked other known facial skin entities prompting referrals to specialty offices, misdiagnoses, patient misconceptions, and the potential initiation of erroneous treatments. These facial skin presentations, which we refer to as “mask dermatitis”, have brought about a new “masquarade syndrome”. Recent literature has described similar facial dermatoses which have been termed "maskne" (3). It is surmised that alterations in skin temperature, pH, and humidity apparently affect sebum secretion in the face leading to inflammatory changes (4). Although the analogy to acne is certainly plausible, we feel that our cases may be more consistent with contact dermatitis. We found that simply discontinuing mask wearing often resolves the facial outbreaks and prevents the need for unnecessary topical therapy, oral medications and needless surgical biopsies. In the wake of the recent COVID-19 pandemic, we feel strongly that “mask dermatitis” should be considered as part of the differential diagnosis in all patients presenting with facial skin eruptions.

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Abstract Title: Contact Allergy to Cannabis and Related Essential Oils

Authors and Affiliations: Sara Abdel Azim, MS, Kaitlyn Yim, MD, Shauna Higgins, MD, Josh Wurzer, Brandon Adler, MD

Abstract

Background:
Allergic contact dermatitis (ACD) to cannabis has rarely been reported. In this unique case, terpene analysis was performed to investigate the allergenicity of cannabis, which is of high interest in the current era of legalization.

Conclusions:
We propose that this case of ACD to topical cannabis and essential oils may represent pseudo-cross-reactivity from shared chemical components, particularly limonene. Alternatively, the patient could have been sensitized to other allergen(s) in cannabis via topical use. Sensitization to essential oils may increase the risk for cannabis contact allergy. Building on the limited knowledge of cannabis ACD is important, as more cases may emerge in association with increasing use.

Abstract Title: Demonstration of Convolutional Neural Networks to Determine Patch Test Reactivity

Authors and Affiliations: Adarsh Ravishankar, MD, Nicholas Heller, Paul Lorenz Bigliardi, MD

Abstract

Objectives:
Convolutional neural networks (CNNs) have the potential to assist physicians in the analysis of skin lesions. However, such technologies have not been demonstrated to be useful for evaluation of patch testing in allergic contact dermatitis. We demonstrate the performance of a CNN model in discriminating between patch tests with reactions and patch tests without reactions.

Methods:
We performed a retrospective analysis of patch test images from March 2020 to March 2021. The CNN model was trained as a binary classifier to discriminate between reaction and non-reaction patches. Performance of the model was determined using summary statistics and receiver operator characteristics (ROC) curves.

Results:
13,620 images from 125 patients were recorded for analysis. The majority of patients in the cohort were female (81.6%) with Fitzpatrick skin types I-II (88.0%). The area under curve (AUC) was 0.940, indicating a high discriminative performance of the model for this dataset. When run against the test dataset, the model accuracy was 90.1%, with a sensitivity of 87.2% and specificity of 90.2%.

Conclusions:
CNNs have the potential to determine the presence of delayed-type reactions in patch tests. Artificial intelligence systems has the potential to make evaluation of allergy test results more standardized and reproducible and provide quantitative interpretations of patch test images, assisting in the evaluation of potential allergens and medications in clinics and in trials. Future prospective studies are required to assess the generalizability and improve sensitivity and specificity of such models.

Abstract Title: Dermatoscopic Aspects of Patch Test Readings

Authors and Affiliations: Maria Antonieta R. Scherrer, MD, Rotsen C.S.M Frade

Abstract

Objectives:
Dermatoscopy has been used to study inflammatory dermatosis. Some reports describe the main dermoscopic features of patch test reactions. This report aims to demonstrate some dermatoscopic aspects of the patch test readings.

Methods:
We selected examples of the following reactions: doubtful (?+), weak positive (+), strong positive (++), extremely positive (+++), and irritant (IR) presented in the 96-hour readings of patients who were patch tested to the Brazilian standard tray.

Results:
Doubtful reactions presented faint erythema or lighted brown erythema covering the chamber area.
Weak positive reactions showed quite intense erythema associated with papules.
In strong positive reactions, we observed vivid erythema, sometimes with orange patches, crusts, and intense vesiculation with the aspect of soap bubbles. Some reactions presented a whitish central area surrounded by orange erythema and vesiculation. Vessels with different shapes were seen predominantly in these reactions.
Extremely positive reactions presented bubbles covering the tested site, surrounded by erythema. We could also observe a large erythema area with vesicles expanding outside the chamber, sometimes around a central pale area.
We detected Irritant reactions to cobalt showing a poral brown pattern.

Conclusions:
Dermatoscopy is a tool that enhances the visualization of the inflammatory process and can be used in patch test readings. It can help in the differential diagnosis between irritant and positive reactions and their detections especially in type IV and V phototypes.

Abstract Title: Limonene in Pediatric Patients, The Most Prevalent Allergen?

Authors and Affiliations: Ciara O'Grady, John F. Bourke, FRCPI

Abstract

Objectives:
Although previously thought to be rare, allergic contact dermatitis in pediatric patients has been increasingly recognised in recent years. Patch testing however, is done much less frequently in children when compared to adult populations. The aim of our study was to review patch testing in pediatric patients attending our department over a 24 year period, from September 1997-September 2021.

Methods:
We conducted a retrospective review of pediatric patients who underwent patch testing in our department during this period, looking at baseline patient demographics, distribution and duration of dermatitis, history of atopy and detected allergens and their relevancy.

Results:
In total, 3308 patients underwent patch testing in our department over the study period. 105 (or 3.17%) were in pediatric patients. Mean age was 10.2yrs (range 5-15yrs). 38(36.2%) of paediatric patients had positive patch tests. The most commonly detected allergens were nickel sulfate hexahydrate in 5.7% of positive results(6 patients), hydroperoxides of limonene in 5.7%(6 patients) and fragrance mix in 5 patients(4.8%). Positive results for linalool, balsam of peru and colophony were seen in 4 patients(3.8%). Other relevant detected allergens included chromate, colophony, neomycin sulfate and methylisothazolinone.

Conclusions:
Our study revealed a wide range of allergens for which pediatric patients tested positive. Hydroperoxides of limonene was introduced to our patch testing series in 2014. Since then, limonene has accounted for 14.63% of positive patch test results making it, in our opinion, the most significant allergen in pediatric patients attending our department.

Abstract Title: Piloting Photographic Photonic Patch Testing: Pioneering Equitable Diagnosis of Contact Dermatitis

Authors and Affiliations: Eimear Gilhooley, Lisa F. Kiely, Cathal O'Connor, Catriona Gallagher, Garrett O'Connell, Michael McAulliffe, John F. Bourke, FRCPI

Abstract

Objectives:
Due to restricted access to cutaneous patch testing (PT) during the SARS-CoV-2 pandemic innovative strategies were necessary to promote equitable healthcare. Photonics generates, detects and manipulates physical light (photons) which can assess blood-flow in a clinical photograph and potentially act as a surrogate marker for cutaneous inflammation. We wished to assess if clinical photography and photonic image analysis could improve the virtual interpretation of PT results.

Methods:
PT photographs of 30 consecutive patients were taken using a 40-megapixel colour camera contemporaneous to PT assessment by study investigators. Photographs were then analysed using HyperCube using Principal Component Analysis (PCA), a technique used to reduce the dimensionality of datasets. Photonic images were then examined to determine a combination of variables or colour patterns indicating a positive result.

Results:
Thirty patients were recruited from September-November 2020. Two blinded investigators determined whether the results were positive, ?positive, irritant or other. Photonic, photographic and clinical results were compared. Initial blinded photonic evaluation captured 40% of positive PT while photographic assessment captured 51%. Unblinded evaluation captured 90% of both PCA and clinically positive results.

Conclusions:
The SARS-CoV-2 pandemic catalysed many changes in healthcare delivery and introduced opportunities to produce patient centred care. This pilot study employs innovative technology to improve rural accessibility to PT, promote inclusivity and reduce carbon emissions by reducing patient travel. Further development is necessary as while PCA analysis of digital images improves pick-up of positive PT virtually it remains inferior to face-to-face assessment. Multispectral imaging has the potential to expand the range of wavelengths further.

Abstract Title: Propylene Glycol Reactions More Common in Patch Test Patients with Skin of Color

Authors and Affiliations: Sydney D. Sullivan, Penelope Pyoung Kim-Lim, BS, Chidubem A. V. Okeke, BS, Lauren W. Hastings, Simran Dhaliwal, Iryna Rybak, Peggy A. Wu, MD MPH

Abstract

Objectives:
Propylene glycol (PG), the American Contact Dermatitis Society 2018 Allergen of the Year, is frequently found in personal care products, as well as in prescription and over the counter topical medications as a vehicle and humectant. Previous studies have examined PG and a found a higher associated positivity in atopic populations. In this study, we aim to better identify other characteristics including race in relation to positive PG patch test reactions.

Methods:
An IRB-approved REDCap™ registry of patients from University of California, Davis, Contact Dermatitis Clinic who underwent patch testing was reviewed for characteristics including age, sex, race, ethnicity, history of atopic dermatitis (AD), final diagnosis, and culprit allergens. Statistical analysis was performed with STATA®.

Results:
From 2018-2021, 23 (5%, 10 female) of 498 patch-tested patients were positive for PG. Of these patients, 8 identified as White, 6 Asian American, 3 Black/African American, and 4 Hispanic. A non-White race identification was significantly associated with an increased odds ratio of 2.79 (95% confidence interval 1.12-6.93, p = 0.03) for PG-positive patch tests after controlling for age and sex. Additionally, 11 (48%) of the PG-positive patients had a history of AD, a proportion which was not significantly different from the general patch test population (chi-square not significant).

Conclusions:
Patients with skin of color are more likely to have propylene glycol positive patch test reactions.