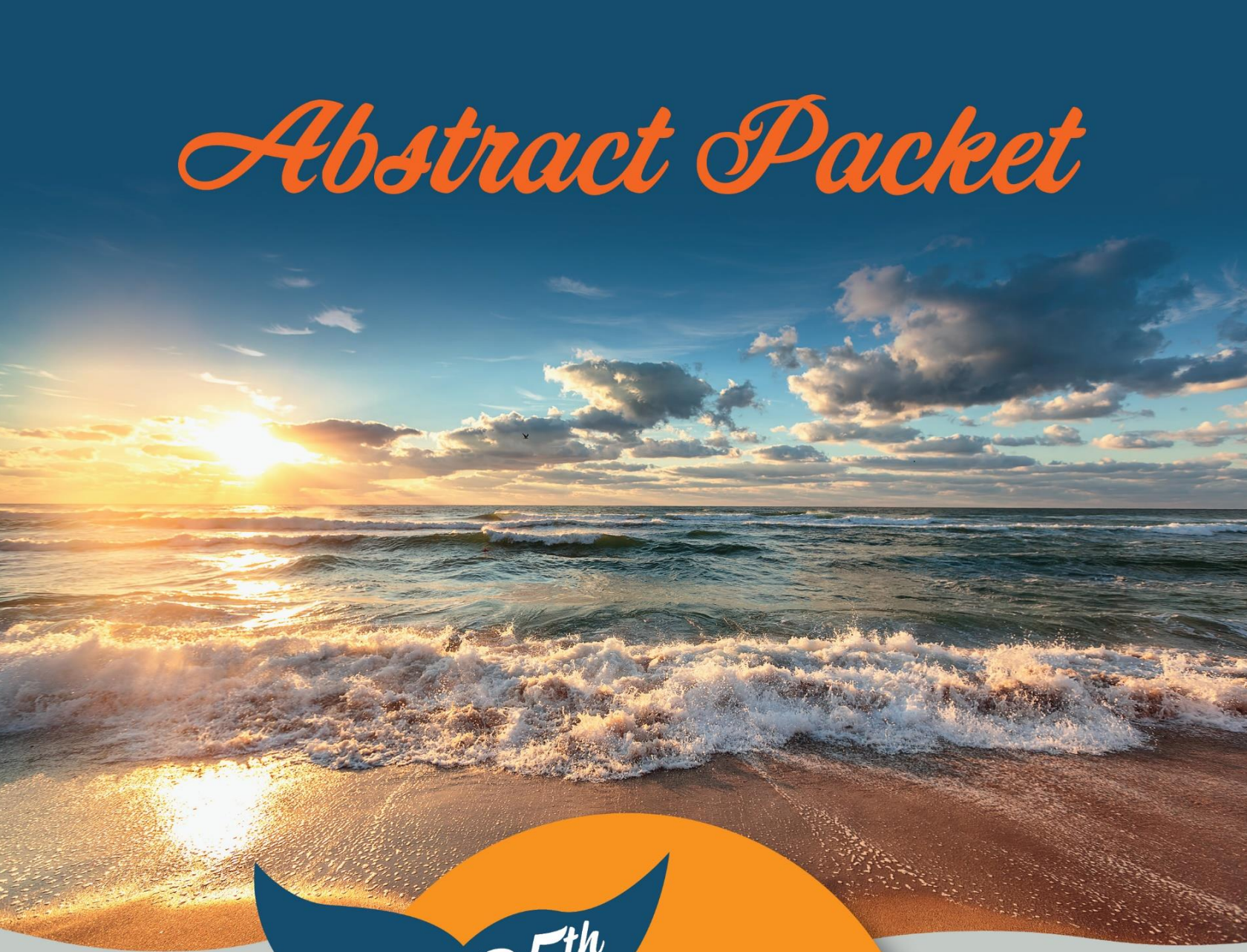
Abstract Packet



35th Annual Meeting

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WESTIN SAN DIEGO BAYVIEW

San Diego, CA

AMERICAN CONTACT DERMATITIS SOCIETY®

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Fisher Presentations (in order of presentation) **Emerald Ballroom**

General Session Presentations (in order of presentation) **Emerald Ballroom**

Poster Presentations (in order of location) **Crystal Ballroom I/II**

Poster Presentations Continued (in order of location) **Crystal Ballroom I/II**

#	*Title*	*Presenter*	*Page*
10	Irritancy Potential of Supergoop! ® Unseen Sunscreen: Recommendations for Patch Testing to this Popular Product	Caroline Brumley, BS	21
11	Prevalence of Contact Allergens in “Clean” Baby Washes, Bubble Baths, and Moisturizers	Caroline Brumley, BS	22
12	Sources of Exposure to Pramoxine, an Emerging Sensitizer	Caroline Brumley, BS	23
13	Characterization of Pediatric Patch Testing: A Retrospective Review, 2020-2023	Caroline Brumley, BS	24
14	Repeat Reactions After Surgery: A Case of Allergic Contact Dermatitis to Lidocaine	Kristina-Noel Donohue, BS	24
15	Bed Bug Bites as an Aggravating Trigger for Atopic Dermatitis	Kazim A. Jaffry, BA	25
16	Readability Assessment of Online Patient Education Materials for Diaper Rash	Jiwon Park, BA	25
17	Allergic Contact Dermatitis to Isopropyl Alcohol in a 5yo Girl	Leanna M. Hansen, MD	26
18	Contact Dermatitis in an Operational Shipboard Environment	Serena X. Zhang, MD	26
19	Type I Hypersensitivity in Photo-Allergic Contact Dermatitis	Shawn Afvari, BS	27
20	Contact Sensitization to Multiple Allergens: A Retrospective Cohort	Danny Daniely, MD	27
21	Nickel Contact Allergy Causing Significant Dermal Indurated Plaque Beyond Patch Testing Site	Heidi Oi-Yee Li, MD	28
22	Permanent Makeup and the Allergenicity of Pigments	Sarah M. Rigali	28
23	Contact Dermatitis in Skin of Color: A Retrospective Study from a Comprehensive Patch Testing Center	Puneet Arora, BS	29
24	Headphone Dermatitis: A Case of Allergic Contact Dermatitis to 4,4’-Diaminodiphenylmethane (MDA)	Puneet Arora, BS	30
25	Quality of Life Assessment in Patients Diagnosed with Allergic Contact Dermatitis in Mongolia	Bulgan Jargalsaikhan	30
26	A Case Report of Allergic Contact Dermatitis to a Barrier Film Used in Peripherally Inserted Central Catheter (PICC) Care	Natnaelle E. Admassu, MD	31
27	Enhancing Wig Well-Being: Strategies to Mitigate Allergic Contact Dermatitis in Patients Who Wear Wigs	Jennifer O. Ogah, BA	31
28	Unmasking the Hidden Trigger: A Case of Occupational Acrylate Allergy Masquerading as a Perinasal Rash	Hailey Konisky, BS	32
29	A Case Report of Lymphomatoid Contact Dermatitis	Julia Giordano	32
30	Exfoliative Erythroderma from Occupational Colophony Exposure	Julia Giordano	33
31	Reticular Telangiectatic Erythema and Contact Dermatitis to an Implantable Cardioverter-Defibrillator: An Overlap of Two Rare Phenomena	Janis Chang, MD	33
32	Managing Allergic Contact Dermatitis due to Hair Dye in an Immunocompromised Patient	McKenzie E. Maloney, BS	34
33	Epoxy Resin Contact Dermatitis in a Retired Fisherman	Tess M. Lukowiak, MD	34
34	Timber Troubles: Yellowheart Wood-Induced Allergic Contact Dermatitis in a Woodworker	Neil Harrison Vigil, MD	35
35	The Burden of Air Pollution on Dermatitis: A Brief Report and Call to Action	Kathyana P. Santiago Mangual, BA	36
36	The Ethics of Offering Diagnostic vs. Therapeutic Options for Patients with Dermatitis: Assessing Trends in Medicare Expenditure in Patch Testing vs. Dupilumab	Kathyana P. Santiago Mangual, BA	37

Poster Presentations Continued (in order of location) **Crystal Ballroom I/II**

***** FISHER PRESENTATIONS *****

Formaldehyde and Methylisothiazolinone Detected in Children's Blowing Bubble Solution: Results of the Chromotropic Acid Method, Isothiazolinone Spot Test, and Ultrahigh-Performance Liquid Chromatography-Tandem Mass Spectrometric Analysis

Authors and Affiliations: Nicholas Battis, Park Nicollet Health System; Samuel Ekstein, Geisinger Medical Center; Magnus Bruze, Department of Occupationalö and Environmental Dermatology, SUS; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

Abstract

Objectives:
Formaldehyde and Methylisothiazolinone (MI) are both common preservatives, regularly found in personal and household products, including soaps. Both are known to be common contact allergens. However, there is no literature assessing the presence of these compounds in children's blowing bubble solution. We aim to assess the presence of formaldehyde and MI in blowing bubble solution.

Methods:
15 bubble blowing solutions were selected from the top sellers on Amazon, Walmart, and Target websites. The Chromotropic Acid Method (CAM) was conducted on all samples per protocol. All samples were additionally tested using the Lovibond® Isothiazolinone Colour Card Kit (56K00141). Isothiazolinone testing was performed per protocol listed in the manufacturer's instructions. Ultrahigh-Performance Liquid Chromatography-Tandem Mass Spectrometric Analysis was performed on all samples at Lund University in Malmö, Sweden.

Results:
10 of 15 (66.7%) blowing bubble solutions were positive for formaldehyde. 7 of 15 (46.7%) were found to be positive for isothiazolinones via spot testing. 4 of 15 (26.7%) were found to contain MI via mass spectrometry. There was concordance between spot testing and mass spectrometric analyses for 8 of 15 (53.3%) samples. Only 2 of 7 (28.6%) samples positive on MI spot testing were found to contain MI on mass spectrometry. 3 of 4 (75.0%) of samples positive for MI on mass spectrometry also were positive for formaldehyde.

Conclusions:
Formaldehyde is present in most blowing bubble solutions we tested and may co-present with MI. There is minimal concordance between MI spot testing and mass spectrometry for these solutions.

Acknowledgements:
We would like to thank Javed Shaik, MS, DVM, PhD for providing laboratory facilities and equipment to conduct Chromotropic Acid Testing.

Clinical Relevance of Borderline Reactions in Patch Testing: A Single-Center Retrospective Study

Authors and Affiliations: Puneet Arora, University of Minnesota Medical Shool; Caroline Brumley, Park Nicollet Health Services; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

Abstract

Objectives:
Introduction: Borderline reactions in patch testing are infrequently reported in the literature; however, recent reports have suggested they be assessed with the same scrutiny as stronger reactions (1+, 2+, 3+).
Objective: Assess the clinical relevance of borderline reactions in patch testing.

Methods:
Retrospective study included 1514 patients comprehensively patch tested via the NACDG standard series and additional allergens based on history. The clinical relevance of each reaction was graded based on the NACDG scale: definite, probable, possible, past, unknown, and irritant. Reactions were considered “unique” if an additional mild-to-strong reaction to the same chemical at a different concentration was not observed.

Results:
68.9% (1043) of patients demonstrated at least 1 borderline reaction. Of 4453 total borderline reactions, 92.4% (4113) were unique. Only 3.5% (144) and 12.1% (500) of the total unique borderline reactions were determined to be of definite or probable clinical relevance respectively. "Fragrance" was the most common allergen family present among the unique definite borderline reactions (37). However, 24 (64.9%) of these also had a stronger reaction to another fragrance. The most common individual allergen present among the definite borderline reactions was methylchloroisothiazolinone/methylisothiazolinone (MCI/MI; 36), with 21 (58.3%) being unique. Findings remained consistent when isolating patients with skin of color.

Conclusions:
Few unique borderline reactions demonstrate definite clinical significance, and many have similar stronger reactions that encapsulate them for clinical purposes. However, identification of borderline reactions to MCI/MI and cocamidopropyl betaine may be of clinical significance and as they most frequently were not supported by stronger reactions.

Nickel Secretion of Microneedle Products

Authors and Affiliations: Sarah Rigali, Rosalind Franklin University Chicago Medical School; Walter Liszewski, Northwestern University

Abstract

Objectives:
Microneedling is a cosmetic procedure used to treat dyschromia and improve skin texture. Little is known if these needles—which may contain nickel—degrade and secrete nickel when used.

Methods:
Used microneedles from five different brands were collected. The dimethylglyoxime test was used to determine if these needles secreted nickel. A scanning electron microscope was subsequently utilized to image the needles to assess for chips and cracks.

Results:
Three of five brands, Morpheus 8 (n=9), Scarlet RF (n=29) and Sylfirm X (n=5), had positive dimethylglyoxime tests, demonstrating nickel secretion. Two brands, Vivace (n=6) and SkinPen (n=5), had negative dimethylglyoxime tests. Irregularities in the surface of all 5 samples of microneedles were seen upon investigation by scanning electron microscope.

Conclusions:
With use, some microneedling devices chip and secrete nickel. Patients with known nickel allergies should be cautioned about this risk, however, it is unknown if microneedling will trigger dermatitis in sensitized individuals.

Effect of a Shorter Occlusion Time and Controlled Wetting on Patch Test Positivity: A Prospective Comparative Study

Authors and Affiliations: Rhea Ahuja, All India Institute of Medical Sciences, New Delhi; M Kalaivani, All India Institute of Medical Sciences, New Delhi; Kaushal Verma, All India Institute of Medical Sciences, New Delhi

Abstract

Objectives:
Conventionally patches are applied for 48 hours in patch testing. In tropical climates, this long occlusion duration causes excessive sweating and sometimes the patches come off. Hence, we compared the patch test positivity between occlusion time of 24-hours followed by controlled wetting vs. 48-hours in patients of allergic contact dermatitis.

Methods:
Patients (age>18years) of suspected contact dermatitis underwent patch testing with the Indian Standard Series, parthenium acetone-extracts and patient material. Patches were applied in duplicate on either side of the back. Using a random-number table, one set of patches was removed after 24-hours of occlusion followed by controlled wetting, while the other after 48-hours. After 24 hour-removal, the patients were instructed to wet that half using 500ml water followed by mild sponging. Readings were performed at 48 and 96 hours by two dermatologists, blinded to the duration of occlusion.

Results:
The study included 50 patients (M:F- 32:18; mean age: 52.2 ± 9.75 years). A total of 57 and 68 positive reactions were observed after 48 hours' occlusion at 48 and 96 hours reading respectively. Of these 50 (87.7%) and 60 (88.2%) patches were positive and concordant and noted at 24 hours occlusion time. The Cohen's kappa coefficient were 0.93 for 48 hours and 0.94 for 96 hours reading, hence showing an almost complete agreement (? > 0.81) with a comparable ICDRG grading.

Conclusions:
Patch test positivity is not compromised by reducing the occlusion time to 24-hours followed by controlled wetting. However, the study had a small sample size and only the standard series was analyzed.

Characterizing Inpatient Allergic Contact Dermatitis: A National Perspective

Authors and Affiliations: Sara Behbahani, Massachusetts General Hospital; Amar Desai, Rutgers New Jersey Medical School; JiaDe Yu, Massachusetts General Hospital

Abstract

Objectives:
Allergic contact dermatitis (ACD) is a common cause for dermatologic consult and often confused for several other conditions, including cellulitis. There is a paucity of data regarding the characterization of ACD in the inpatient setting. This study aims to better elucidate the patient demographics and culprit agents of ACD in the inpatient setting.

Methods:
The 2016-2020 Nationwide Inpatient Sample was queried for ACD hospitalizations using International Classification of Diseases, Tenth Revision (ICD-10) code “L23.X” for ACD due to different causes.

Results:
Of 63,960 ACD hospitalizations (average age: 50.4 years, 56.7% female), the most frequent responsible agents were identified as adhesives (21.9%), plants (21.8%), unspecified other causes (10.9%), and drug contact with skin (9.9%); food (0.4%), cosmetics (0.6%), dyes (0.6%), and metals (1.6%) were the least often identified causes. White patients were most often affected (73.0%) followed by Hispanic (10.0%) and Black (9.7%) patients. A minority (10.8%) of patients were pediatric. Patients were relatively evenly distributed amongst income quartiles with 52.4% of patients below median income level. Of those diagnosed with ACD, 5,480 (8.6%) patients were admitted primarily for ACD with an average length of stay of 2.6 days.

Conclusions:
ACD is rather common in the inpatient setting and its inpatient epidemiology reflects a significant proportion of environmental and occupational offending agents with roughly 11% of causes coded as unknown at discharge. Further studies helping to better characterize ACD in an inpatient setting can contribute to increased understanding and recognition of ACD.

Photodermatoses in Patients with Atopic Dermatitis: A Ten-Year Retrospective Cohort Study

Authors and Affiliations: Shawn Afvari, Weill Cornell Medicine; Jonathan Zippin, Weill Cornell Medical College

Abstract

Objectives:
Patients with atopic dermatitis (AD) have an impaired skin barrier that heightens potential for sensitization and allergen penetrance, and reports suggest that allergic contact dermatitis (ACD) worsens the clinical course for patients with AD. However, there is sparse data on whether a relationship exists between AD and photodermatoses. In the present study, we evaluate the association between AD and photodermatoses and also characterize a cohort of phototested patients over a 10-year period.

Methods:
We performed a retrospective review of clinical data of all patients photo-tested. A multivariable logistic regression model was conducted to evaluate AD as a risk factor for photosensitivity, PACD, and ACD.

Results:
Age was significantly and inversely associated with risk of solar urticaria (OR=0.97, 95% CI 0.94-0.99, p=0.045) and general photosensitivity (OR=0.97, 95% CI 0.94-0.99, p=0.03). Patients with AD had no significant difference compared to healthy patients in developing photosensitivity (p=0.61), photoallergy, (p=0.25) or contact allergy (p=0.74). The most common photo-allergens are described in Table 1. Of the prevalent photo-allergens, 44.4% were exclusively photo-patch test positive in AD patients.

Conclusions:
Our study suggests that while both delayed-hypersensitivity reactions, UV-induced allergy in PACD and plain ACD, pose a significant issue in patients with AD, rates are comparable to non-AD patients. Table 1 suggests that AD patients have a unique photo-allergen sensitivity profile as compared to non-AD patients. In understanding allergen sensitivity prevalence, dermatologists may design photo-allergen panels tailored for pre-existing medical conditions and delineate a more effective safe-product list (including sunscreens) with specific guidance in allergen avoidance.

The Impact of Systemic Immunomodulating Therapies on Patch Testing Results in Children

Authors and Affiliations: Mykayla Sandler, Harvard Medical School; Li-Chi Chen, Lahey Hospital and Medical Center; JiaDe Yu, Massachusetts General Hospital

Abstract

Objectives:
Allergic contact dermatitis (ACD) affects 20% of children and often coexists with other systemic inflammatory conditions such as atopic dermatitis. Patch testing (PT) is the gold standard for diagnosis. Children with concomitant dermatoses may require systemic immunomodulators prior to PT, yet it remains unclear whether these treatments interfere with PT results. While guidelines have been published regarding PT in adults on immunomodulators, there are no published studies regarding the effects of these treatments on PT results in children.

Methods:
This is a retrospective cohort study using the Pediatric Allergic Contact Dermatitis Registry from 2018 to 2023 to investigate the PT results of children on systemic immunomodulators, compared with controls. A propensity score-based stabilized inverse probability weighting method with logistic regression was performed to estimate the likelihood for mounting at least one positive PT result in children on immunomodulating therapies.

Results:
Of the 987 children included in the study, 63 were on immunomodulators at the time of PT. Patient characteristics were well-balanced between the immunomodulator and non-immunomodulator groups after weighting. There was no statistical difference in the odds of a positive reaction in patients on systemic immunomodulators compared to controls (odds ratio: 0.59; 95% confidence interval, [0.35-1.02]). Sub-analysis of children on Dupilumab showed no difference in the odds of a positive reaction compared to controls (odds ratio: 0.69; 95% confidence interval, [0.33-1.57]; p=0.40).

Conclusions:
While limited by a small sample size, these preliminary results suggest that immunomodulating therapies do not significantly interfere with PT results in children.

Occupational Contact Dermatitis in Construction Workers: A Retrospective Analysis of the North American Contact Dermatitis Group Data, 2001 to 2020

Authors and Affiliations: Alexander Idrogo-Lam, University of Wisconsin School of Medicine and Public Health; Margo Reeder, UW School of Medicine & Public Health

Abstract

Objectives:
Studies of construction workers (CWs) with occupational contact dermatitis (CD) in North America are lacking. The purpose of this study is to determine the prevalence of occupational allergic CD and characterize common occupational allergens in CWs referred for patch testing in the U.S. and Canada.

Methods:
This study used a retrospective cross-sectional analysis of CWs who were patch-tested by the North American Contact Dermatitis Group (NACDG) from 2001-2020.

Results:
Of 47,843 patch-tested patients, 681 (1.4%) were CWs. Compared with non-CWs, CWs were more likely to be male (91.0% vs. 30.9%) have occupational skin disease (36.9% vs. 11.4%), and have hand involvement (37.2% vs. 22.5%) (all $p < .0001$). Of 681 CWs, 60.1% (411) had clinically relevant positive patch test reactions and nearly 1/3 of CWs (128) had occupationally relevant patch test reactions. The most common occupationally relevant allergens were potassium dichromate 0.25% pet. (30.5%, 39/128), bisphenol A epoxy resin 1% pet. (28.1%, 36/128), carba mix 3% pet. (14.8%, 19/128), cobalt (ii) chloride hexahydrate 1% pet. (14.1%, 18/128), and thiuram mix 1% pet. (14.1%, 18/128). The top 3 sources of occupationally relevant allergens were cement/concrete/mortar (20.4%, 46/225); gloves (15.1%, 34/225); and coatings (paint, lacquer, shellac, varnish, stains) (9.8%, 22/225).

Conclusions:
This is the largest study of patch-tested CWs in North America and occupational CD is common in these patients. Frequently identified etiological sources of occupational allergic CD included metals, epoxy resin, and rubber. These findings highlight the importance of a detailed work history when evaluating CWs for occupational CD.

***** GENERAL SESSION PRESENTATIONS *****

Prevalence and Clinical Impact of Corticosteroid Phobia Among Patients with Chronic Hand Eczema - Findings from the Danish Skin Cohort

Authors and Affiliations: Maria Christensen, Department of Dermatology, Bispebjerg Hospital, Denmark; Johan Sieborg, Department of Dermatology, Bispebjerg Hospital, Denmark; Lea Nymand, Department of Dermatology, Bispebjerg Hospital, Denmark; Simon Thomsen, Department of Dermatology, Bispebjerg Hospital, Denmark; Jacob Thyssen, Bispebjerg Hospital; Alexander Egeberg, Department of Dermatology, Bispebjerg Hospital, Denmark

Abstract

Objectives:
To investigate patient-reported knowledge, beliefs, fears, and behaviors concerning topical corticosteroids (TCS), and their relation to treatment adherence in adults with chronic hand eczema (CHE).

Methods:
CHE-patient data from the Danish Skin Cohort; a nationwide population-based prospective cohort, were analyzed. Knowledge, beliefs, fears, behavior, and treatment adherence to TCS was assessed using the Topical Corticosteroid Phobia (TOPICOP) scale and Medication Adherence Report Scale (MARS-5).

Results:
Of 927 adults with mild-to-severe CHE (71.7% women; mean age 55.4 [standard deviation 13.6] years), 66.7% totally agreed or almost agreed that TCS pass into the bloodstream, 75.5% totally agreed or almost agreed that TCS damage the skin and 48.9% totally agreed or almost agreed that TCS would affect their future health. Notably, 36.3% reported some degree of fear of TCS even though they were unaware of any specific risks associated with TCS. Most patients (77.9%) reported that they always or often stop treatment as soon as possible while 54.8% always or often wait as long as possible before starting TCS treatment. Overall, 38.8% reported that they very often, often or sometimes took less medicine than prescribed and 54.0% said that they very often, often, or sometimes had stopped treatment throughout a period. We observed higher non-adherence with increasing corticosteroid phobia (ß= -0.02, 95% confidence interval -0.031 to -0.006, p=0.004).

Conclusions:
Corticosteroid phobia was very common among patients with CHE, even among patients without specific knowledge about TCS-related risks. This translated into decreased treatment adherence, highlighting the importance of corticosteroid phobia among CHE patients.

Cost-Effectiveness of Patch Testing Formaldehydes Using an Algorithmic Approach

Authors and Affiliations: Ning McKenzie, Mayo Clinic, AZ; Matthew Buras, Mayo Clinic Arizona; James Yiannias, Mayo Clínic Scottsdale; Matthew Hall, Mayo Clinic; Molly Youssef, Mayo Clinic; Mark Davis, Mayo Clinic; Yul Yang, Mayo Clinic

Abstract

Objectives:
Patch testing for allergic contact dermatitis (ACD) may include allergens that are redundant due to copositivity. Here, we used an algorithm to evaluate the cost-effectiveness of performing potentially redundant patch tests.

Methods:
A retrospective analysis of Mayo Clinic Data (1997-2022) examined the well-established co-positive formaldehyde group (Formaldehyde 1%, Quaternium 15 1%, Hexahydro-1,3,5-tris(2-hydroxyethyl)triazine 1%, Diazolidinyl urea 1%, Imidazolidinyl urea 2%, Toluenesulphonamide formaldehyde resin 10%, DMDM hydantoin 2% in Aq, DMDM hydantoin 1%, Ethyleneurea melamine formaldehyde mix 5%). Using a novel algorithm, POP (Patch Optimization Platform), a single formaldehyde allergen was identified as best to capture patients with any clinically relevant formaldehyde group positivity. Next, POP determined which additional 1, 2, 3, etc. allergens captured the most additional patients with ACD to formaldehydes. Cost per patch test was $5.19 (Medicare 2022).

Results:
9832 patients were tested to all 9 formaldehyde group allergens in our Standard Series, with 830 having positive patch tests. POP determined that Quaternium 15 alone captures 53% of patients with ACD to formaldehydes; adding Formaldehyde 1% captures 78% of patients. Testing to five allergens (adding Hexahydro-1,3,5-tris(2-hydroxyethyl)triazine, Toluenesulphonamide, and either Diazolidinyl urea or Imidazolidinyl urea) captures over 94% of patients. The incremental cost of adding an allergen past these five allergens was $3189 to $5102 per additional diagnosis.

Conclusions:
Most (94%) patients allergic to formaldehydes are identified when testing for only 5 of 9 formaldehyde group allergens, with increasing costs per additional diagnosis when adding more allergens. We recommend considering an evidence-based optimized allergen selection algorithm, especially for initial screening.

Supplemental Patch Testing Identifies Allergens Missed by Standard Screening Series

Authors and Affiliations: Amber Atwater, Eli Lilly and Company; Raina Bembry, University of Tennessee Health Science Center; Jordan Ward, Medical College of Georgia Augusta University; Rabina Walsh, Duke University; Beiyu Liu, Duke University School of Medicine; Cynthia Green, Duke University Medical Center, Department of Biostatistics and Bioinformatics

Abstract

Objectives:
To determine the demographics, characteristics, frequency, relevance, and interpretation of patch test reactions for supplemental patch testing at Duke Dermatology.

Methods:
Retrospective study of patients patch tested 2017-2020 with the North American Contact Dermatitis Group (NACDG) screening series and supplemental screening series A and B (SSA, SSB). Demographics, characteristics, reaction strengths, relevance and final interpretation were recorded.

Results:
Cohort included 791 patients; 73.5% female, 68.6% age >40 years. 74.1% were White, 15.2% Black, 5.7% Asian and 1.5% Hispanic. The most common dermatitis sites were scattered/generalized (27.2%), face (24.0%) and hands (23.5%).
For 2017-2018 and 2019-2020, respectively, 82% (318/388) and 78.4% (316/403) had >=1 “allergic” reaction. Additionally, 13.5% (52/385) and 11.7% (47/403) had SSA reactions, and 38.1% (115/302) and 31.5% (101/321) had SSB reactions. In the 87 (2017-2018) and 99 (2019-2020) patients with negative NACDG testing, 17 (19.5%) and 12 (12.1%) had supplemental reactions.
Of the 34 supplemental allergens with reaction frequency >=1%, 58.8% (20/34) are not part of the ACDS 90 (2020) or NACDG 2021-2022 screening series. The highest frequency allergens from this group were dodecyl and octyl gallate, cinnamic alcohol, phenyl salicylate, hexahydro-1,3,5-tris-(2-hydroxyethyl) triazine and abitol; these are potential candidates for future screening series.

Conclusions:
Supplemental patch testing identifies additional relevant allergens in patients with suspected allergic contact dermatitis.

Acknowledgements:
Statistical support was provided by Duke Dermatology.

Single-Cell RNA Sequencing and Interstitial Fluid Proteomic Analysis Distinguishes Allergic from Irritant Contact Dermatitis in Human Volunteers

Authors and Affiliations: Michael Frisoli, University of Massachusetts Chan Medical School; Manuel Garber, University of Massachusetts Chan Medical School; John Harris, University of Massachusetts Chan Medical School

Abstract

Objectives:
Patch test reactions can sometimes be challenging to interpret, as weak allergic reactions may resemble irritant reactions. Our aim was to determine if a non-scarring skin biopsy technique and multi-omics analysis could be used to discover molecular characteristics that reliably distinguish allergic from irritant human contact dermatitis.

Methods:
We recruited 10 healthy volunteers and sensitized them to squaric acid dibutyl ester (SADBE). SADBE-induced allergic reactions were sampled by suction blister biopsy at 2 days after patch application, along with day 2 irritant reactions induced by sodium lauryl sulfate (SLS), vehicle control patch reactions, and nonlesional skin. Cells within suction blister fluid were analyzed by single-cell RNA sequencing and suction blister cell supernatant was analyzed by Olink proteomic proximity extension assay.

Results:
Allergic and irritant reactions contained similar cell populations by scRNAseq analysis, yet 2 populations identified as CD8+ T cells and KLRD1+ NK cells were significantly enriched within allergic samples relative to irritant samples. Differential expression analysis and receptor-ligand cell signaling estimation identified IFNG and IL4 as allergy-enriched cytokines. Proteomic analysis confirmed that IFNG and IL4 are both significantly enriched in allergic relative to irritant skin, and a logistic regression model trained on proteomic data was capable of distinguishing allergic reactions from both irritant and nonlesional skin with 93% sensitivity and 93% specificity.

Conclusions:
Skin interstitial fluid, captured here by suction blister biopsy, contains biomarkers that reliably distinguished allergic from irritant contact reactions.

Contact Dermatitis and Patch Testing: A DataDerm Study

Authors and Affiliations: Margo Reeder, UW School of Medicine & Public Health; Alexander Idrogo-Lam, University of Wisconsin School of Medicine and Public Health; Arik Aninos, American Academy of Dermatology

Abstract

Objectives:
Contact dermatitis is common and includes both irritant and allergic dermatitis. DataDerm is a qualified clinical data registry owned by the American Academy of Dermatology and contains data on over 13 million patients and 47 million visits. The purpose of this study is to characterize patients with contact dermatitis in DataDerm.

Methods:
DataDerm was queried for contact dermatitis diagnoses and patch test procedures from Jan 1st, 2015 to Dec 31st, 2022. Practice characteristics such as number of providers, patients seen, and patch tests performed were also extracted. Additionally, distance travelled by the patient for patch testing was calculated.

Results:
A total of 37,064 patients were patch tested. Most patients were age >18 (95.2%) and a majority of tested patients were female (69.4%); male 26.1%, unknown 0.2%. The most common visit diagnoses were unspecified contact dermatitis and allergic contact dermatitis. There were a total of 351,775 occurrences of contact dermatitis with the most common being allergic contact dermatitis (44.8%), irritant contact dermatitis (32.5%) and unspecified contact dermatitis (30.5%). The majority were white (61.8%), with the next most common race/ethnicity being other (4.8%), followed by African American (3.4%) and 2.6% were Hispanic/Latino. For patients with a diagnosis of allergic contact dermatitis, only 10.1% were patch tested. Regardless of practice size, the mean distanced patients traveled to undergo patch testing was less than 22 miles.

Conclusions:
Contact dermatitis is common but only a small subset of patients were patch tested. DataDerm can enhance our understanding of patch testing practices.

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

The Patient's Primer: Elevating Patch Testing Outcomes with Informed Engagement

Authors and Affiliations: Aaron Tisack, Henry Ford Department of Dermatology; Holly Kerr, Henry Ford Health

Abstract

Objectives:
To disseminate via poster and QR code our patient materials that contextualize allergens and prepare patients for patch testing.

Methods:
A spreadsheet containing each allergen was developed and is prepared for dissemination.

Prevalence of Allergens in Ear Care Products

Authors and Affiliations: Shawheen Rezaei, Stanford University School of Medicine; Golara Honari, Stanford University; Jennifer Chen, Stanford University

Abstract

Objectives:
Allergic contact dermatitis is a common condition affecting up to 1 in 5 persons. The aim of this study is to identify potential allergens in products marketed for ear care.

Methods:
In July 2023, the websites of two large retail stores, Walgreens and CVS, were searched for ear care products and evaluated for the presence of allergens from the American Contact Dermatitis Society Core 90 Allergen series. Products were excluded if they were unrelated to ear care, were taken orally, or lacked a list of ingredients. After removing duplicates from the search results, 47 distinct ear care products were identified.

Results:
The average number of allergens per ear care product was 1.2 (95% CI: 0.9-1.5). Twelve products had no documented allergens (25.5%), 35 had at least 1 allergen (74.5%), 17 had at least 2 allergens (36.2%), and 6 had 3 allergens (12.8%). There were 19 unique contact allergens identified in ear care products. The most common allergens in ear care products were Compositae plants (27.7%, 13 of 47 products), propylene glycol (27.7%, 13 of 47 products), benzalkonium chloride (14.9%, 7 of 47 products) and fragrance/other botanicals (12.8%, 6 of 47 products).

Conclusions:
Our study found that the majority of ear care products contained at least one allergen, most commonly Compositae plants and propylene glycol. Clinicians should be aware of what allergens are present in ear care products so that patients can be counseled appropriately.

Failure of Contact Allergen Avoidance Due to Family Members' Non-Approved Laundry Detergents

Authors and Affiliations: Audrey Tsai, San Diego Allergy, Asthma & Immunology Consultants; Bernard Feigenbaum, San Diego Allergy Asthma & Immunology Consultants, Inc

Abstract

Background:
A best practice in the treatment of allergic contact dermatitis (ACD) is contact allergen avoidance based on patch test results.

Conclusions:
We present this case to increase awareness of this potential hidden allergen exposure. We have updated our allergen avoidance education to make patients aware.

Implementing Teledermatology in Rural Area of Mongolia: Diagnostics of Allergic Contact Dermatitis

Authors and Affiliations: Battsetseg Bayaraa, The National Dermatology Center of Mongolia

Abstract

Objectives:
Since the introduction of the "Derma" teledermatology application in Mongolia in 2015, one of the most consulted skin conditions from rural areas of Mongolia was allergic contact dermatitis. Dermatologists from different provinces provide picture of a skin lesion and accompanied diagnosis to the National Center of Dermatology of Mongolia. Therefore, we aim to study inter-rater reliability in assessing quality of diagnostic accuracy using store and forward form of teledermatology.

Methods:
Some 215 cases diagnosed as allergic contact dermatitis and stored in the "Derma" teledermatology application were analyzed. The diagnostic accuracy of a dermatologist from province and four experts from the National Dermatology Centre was evaluated using statistics for measuring inter-rater reliability such as Fleiss's kappa method. Partial and complete reliability was measured. Experts were double-blinded.

Results:
There were 47.9% (n=103) children and 52.1% (n=112), and the average age was 24.4±8.9 years. Four experts agreed and disagreed with dermatologists from provinces in 20.9% and 62.4% of cases respectively. There were 25 different diagnoses from the experts instead of allergic contact dermatitis from provinces. The complete reliability was k=0.262 (p=0.005) and partial reliability was k=0.639 (p=0.005). The most common inconsistencies were diagnosed as drug eruptions (k=0.422), atopic dermatitis (k=0.410), and nummular eczema (k=0.217).

Conclusions:
Diagnostic accuracy was poor for allergic contact dermatitis cases in teledermatology. The complete reliability was fair and partial reliability was good. Differential diagnosis needs to be improved.

Occupational Allergic Contact Dermatitis to Ultrasound Gel: A Case Report

Authors and Affiliations: Charmaine Lim, Massachusetts General Hospital; Emily Gan, KK Women's and Children's Hospital; Sylvia Teo, KK Women's and Children's Hospital

Abstract

Background:
Allergic contact dermatitis (ACD) to ultrasound gels has been described in both patients and health care professionals exposed to these gels.

Conclusions:
Ultrasound gels can cause ACD due to various allergens. We wish to highlight that occupational ACD to ultrasound gel should be suspected in health care professionals performing ultrasound examinations who present with dermatitis on their dominant arm and hand.

Native California Plants as Sources of Allergic Contact Dermatitis

Authors and Affiliations: Nelly Kokikian, David Geffen School of Medicine at UCLA; Phillip Scumpia, David Geffen School of Medicine at UCLA

Abstract

Objectives:
Contact dermatitis resulting from plant exposure can present days or hours after contact and establishing a causative agent can be quite difficult. The most well-recognized source of allergic contact dermatitis caused by plants comes from the Toxicodendron family (poison ivy, oak, and sumac). This review aims to elucidate other sources of contact dermatitis from plants native to California.

Methods:
A systematic review of PubMed and Embase was conducted to include results from the following search terms: ("Dermatitis, Contact"[Mesh] OR "contact dermatitis") AND ("Plants"[Mesh] OR plants OR plant) AND ("California"[Mesh] Or California OR "southern California"). All articles were reviewed to confirm discussion of allergic contact dermatitis, the scientific and the scientific or common names of plants or plant genera. These findings were cross-referenced on www.calscape.org and www.calflora.org to confirm California nativity.

Results:
52 species of plants across 17 genera were identified as native to California and are documented to cause contact dermatitis.

Conclusions:
There are more plant sources of contact dermatitis in California than are commonly known by dermatologists. By improving our knowledge of sources of contact dermatitis in plants, we are better positioned to identify novel plant-derived chemical compounds and allergens that may be present in cosmetics, herbal remedies, and surrounding environments (gardens, campgrounds, hiking trails, etc.). Limitations of the study include excluding common houseplants and plants that were introduced to California through travel. Knowledge of these sources of contact dermatitis can aid in the identification of offending chemicals and impact the development of future patch test materials.

A Case of Severe Recalcitrant Dyshidrotic Eczema Mimicking Palmoplantar Psoriasis

Authors and Affiliations: Anjele Tumbokon, Quirino Memorial Medical Center; Terese Monette Aquino, Quirino Memorial Medical Center

Abstract

Background:
Dyshidrotic eczema (DE) and palmoplantar psoriasis (ppPSO) are both conditions presenting with vesicopustules on the palms and soles. While they have differences, distinguishing them can be a challenge in cases complicated with allergic contact dermatitis (ACD).

Conclusions:
This highlights the diagnostic challenge in distinguishing between severe DE and ppPSO in the setting of concomitant ACD, underscoring the importance of a comprehensive evaluation.

Metal Series Patch Testing for Cardiac Devices: A 13-Year Retrospective Review

Authors and Affiliations: Ganesh Maniam, Mayo Clinic School of Graduate Medical Education; Phillip Link, Mayo Clinic; Jenny Link, Mayo Clinic Department of Dermatology

Abstract

Objectives:
This study investigated metals patch testing surrounding cardiac device implantation, and whether pre- or postoperative testing results impacted cardiac device management.

Methods:
An IRB-exempt retrospective review was conducted from 2009 – 2022 of adult patients at a large academic center who underwent metals patch testing and had procedural codes for prosthetic valve replacement (PVR), implantable cardioverter defibrillator (ICD) implantation, or permanent pacemaker (PPM) implantation. The review identified 13 patients who met inclusion criteria.

Results:
Nine patients underwent preoperative patch testing for PVR (n=4), PPM (2), left atrial appendage occlusion device (2), or ICD (1). All had a history of allergic contact dermatitis (ACD). Relevant positives included nickel (4), palladium (3), cobalt (1), potassium dicyanoaurate (1), and manganese (1). Preoperative testing altered management in 4 cases, with positive testing results altering the planned cardiac implant (3) or cancelling the surgery (1). The remaining 5 preoperative patients did not have relevant patch testing results. Four patients underwent postoperative patch testing, performed for PPM (3) and ICD (1). One patient with history of ACD had positive patch testing results (potassium dichromate, potassium dicyanoaurate, manganese chloride, ferrous chloride) leading to removal of PPM and later replacement with different PPM. The remaining 3 patients did not have relevant patch testing results, though 2 had a history of ACD.

Conclusions:
These results suggest that preoperative patch testing can guide cardiac device management in patients with a history of metal contact allergies, while postoperative patch testing is more limited in utility but may still be impactful in rare cases.

A Pain in the Butt - Genital Allergic Contact Dermatitis due to Pramoxine and Propyl Gallate in Hemorrhoid Creams

Authors and Affiliations: Caroline Brumley, Park Nicollet Health Services; Anne Neeley, Park Nicollet Dermatology

Abstract

Background:
Propyl gallate, a preservative used in personal care products, is a known cause of lip and hand allergic contact dermatitis (ACD). Pramoxine is a topical anesthetic and emerging contact allergen used in anti-itch or pain-relief preparations. Both pramoxine and propyl gallate are commonly found in hemorrhoid creams. While pramoxine has been associated with anogenital ACD, propyl gallate has not. We present three patients with concomitant reactions to propyl gallate and pramoxine, all of whom were using hemorrhoid creams containing one or both allergens.

Conclusions:
Propyl gallate may be a relevant allergen in genital ACD. We propose pramoxine and propyl gallate as possible co-sensitizers in patients using hemorrhoidal creams. Pramoxine, and particularly propyl gallate, may not be regularly tested in patch clinics, underscoring the importance of testing to both allergens in patients with anal/genital rash who use topical hemorrhoidal preparations.

Irritancy Potential of Supergoop!® Unseen Sunscreen: Recommendations for Patch Testing to this Popular Product

Authors and Affiliations: Caroline Brumley, Park Nicollet Health Services; Puneet Arora, University of Minnesota Medical Shool; Solveig Ophaug, Park Nicollet Dermatology; Katherine Lee, Park Nicollet Dermatology; Anne Neeley, Park Nicollet Dermatology

Abstract

Background:
Personal products are tested ‘as-is’ to supplement patch testing. Leave-on products are generally tested using patch test chambers whereas wash-off products are tested semi-open (under tape only). Certain leave-on products must be tested semi-open due to high irritancy potential when applied under full occlusion. We present two cases of irritant reactions to Supergoop!® Unseen Sunscreen and make recommendations for patch testing it ‘as-is.'

Conclusions:
The morphology and decrescendo pattern observed in both cases suggest irritant rather than allergic reactions. Neither patient reacted to any of the active or inactive ingredients in the sunscreen. One ingredient, diatomaceous earth, is typically found in wash-off clay facial masks and less commonly in facial powders and deodorants. Diatomaceous earth is made of amorphous silicon dioxide, which has been reported to cause irritation due to its abrasive texture. More investigation is needed into the irritancy potential of diatomaceous earth and its role in leave-on skincare products. We recommend testing Supergoop! ® Unseen sunscreen in a semi-open fashion.

Prevalence of Contact Allergens in “Clean” Baby Washes, Bubble Baths, and Moisturizers

Authors and Affiliations: Caroline Brumley, Park Nicollet Health Services; Tyra Banks, Texas Christian University- Burnett School of Medicine; Solveig Ophaug, Park Nicollet Dermatology

Abstract

Objectives:
Allergic contact dermatitis (ACD) is increasing in pediatric populations, though database tools for allergen avoidance are geared primarily towards adults. Considering the increasing demand for “clean” personal care products, we sought to characterize the allergen profile of such baby washes, bubble baths, and moisturizers.

Methods:
Target.com was visited in October/November 2023. Within the “Clean Baby” filter, 57 baby washes and shampoos, 18 bubble baths, and 39 moisturizers were identified. Ingredient lists were analyzed for the most relevant pediatric contact allergens as per recent literature: fragrance, propylene glycol, lanolin, methylisothiazolinone (MI), cocamidopropyl betaine, and formaldehyde. Compositae was included given its prevalence and relation to fragrance. Product claims were analyzed for trends.

Results:
Fragrance was declared in 82% of the analyzed “clean” baby products. 45% contained cocamidopropyl betaine, 46% compositae, 12% propylene glycol, and 1 moisturizer contained lanolin. 9% of products were free of the identified allergens. No products declared MI or formaldehyde. Of the 33% of products claiming to be unscented, 58% still declared fragrance ingredients. 17.5% of products were truly fragrance-free, with 50% of these containing benzoates. Many marketing claims were made, including “paraben-free” (84%), “dermatologist-approved” (72%), “hypoallergenic” (70%), and references to sustainability (41%).

Conclusions:
Many “clean” baby washes, bubble baths, and moisturizers declare allergens relevant to the pediatric population– most commonly fragrance, followed by cocamidopropyl betaine and compositae. “Fragrance-free” claims are often misleading. While shopping “clean” can fulfill personal values, transparency regarding the possible allergenic effects of such baby products is necessary.

Sources of Exposure to Pramoxine, an Emerging Sensitizer

Authors and Affiliations: Caroline Brumley, Park Nicollet Health Services; Puneet Arora, University of Minnesota Medical Shool; Anne Neeley, Park Nicollet Dermatology

Abstract

Objectives:
Pramoxine (pramocaine) is a non-amide, non-ester topical anesthetic used in over-the-counter anti-itch or pain relief products. Despite a paucity of studies, recent data has shown higher rates of sensitization to pramoxine than other topical anesthetics. Here we characterize results of patch testing to pramoxine and potential sources of exposure.

Methods:
A retrospective chart review was conducted of 1592 patients who underwent patch testing at a single center from July 2020-October 2023. Patients who reacted to pramoxine were identified. Data collected included: reaction strength, clinical relevance score, patient demographics, history of atopic dermatitis, site of dermatitis, and source of exposure. Concomitant reactions were also analyzed to identify possible cross- or co-reactors.

Results:
108 patients (6.8%) reacted to pramoxine; of these, 19 (17.6%) were deemed clinically relevant. Of patients with clinically relevant reactions, 68% were female, 21% had a history of atopic dermatitis, and the average age was 54. Sources of exposure included “antibiotic plus pain relief” ointments (9), anti-itch lotions (9), and hemorrhoid creams (3). Three patients also reacted to benzocaine, and one reacted to lidocaine.

Conclusions:
Sensitization to pramoxine may be on the rise, as our results demonstrate a nearly three-fold increase in positivity rate compared with 2019-2020 data from the North American Contact Dermatitis Group. “Antibiotic plus pain relief” ointments and anti-itch lotions were the most common sources of pramoxine. Application of pramoxine to non-intact skin could be responsible for increased sensitization. Our data suggests that other topical anesthetics (specifically benzocaine) may co-react with pramoxine. Larger sample sizes would help further characterize this relationship.

Characterization of Pediatric Patch Testing: A Retrospective Review, 2020-2023

Authors and Affiliations: Caroline Brumley, Park Nicollet Health Services; Puneet Arora, University of Minnesota Medical Shool; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

Abstract

Objectives:
Allergic contact dermatitis (ACD) was previously considered rare in children due to their developing immune systems and limited exposures. Recent data suggests a similar rate of ACD among children and adults, though children account for less than 10% of patch testing subjects. With few in-depth analyses of pediatric patch testing to date, we characterized a pediatric cohort at one of the largest North American patch testing centers.

Methods:
A retrospective chart review was conducted for 135 patients ages 1-17 who underwent patch testing from July 2020 - August 2023. Data was stratified by age: 1-5, 6-11, and 12-17. Significance-Prevalence Index Numbers (SPIN) were calculated for each allergen.

Results:
86% tested positively and 40% had at least one relevant reaction, with reactions increasing by age group. The most relevant reactions by SPIN were hydroperoxides of linalool, propylene glycol, hydroperoxides of limonene, fragrance mix I, and lanolin. 14% of the most relevant or common allergens were not represented on the North American Contact Dermatitis Group (NACDG) standard series. Top allergens differed with age and when ranked by SPIN versus total reactions. Personal products were tested in 88% of subjects: 45% of patients had positive reactions, 72% of which were relevant.

Conclusions:
Comprehensive patch testing is important in pediatric populations. Common allergens may be missed using only the NACDG standard series. Reactions to personal products tested ‘as-is’ were relevant in 32% of patients, illustrating the possible value of such testing in pediatric populations. Emulsifiers, fragrance, and preservatives represented top relevant allergen categories.

Repeat Reactions After Surgery: A Case of Allergic Contact Dermatitis to Lidocaine

Authors and Affiliations: Kristina-Noel Donohue, Georgetown University School of Medicine; Isabella Camacho, MedStar Georgetown/Wahsington Hospital Center; Alan Moshell, Georgetown University/Medstar Medical Group; Min Deng, MedStar Georgetown/Washington Hospital Center

Background:
The prevalence of Type IV delayed hypersensitivity reactions or allergic contact dermatitis (ACD) to local anesthetic (LA) is estimated to be 2.4% and the rate of ACD to lidocaine, an amide anesthetic, is 0.77%.1 While the incidence of ACD to lidocaine is low, consistent, localized skin reactions after procedures should prompt clinical suspicion and patch testing.2

Conclusions:
While ACD to lidocaine is rare, it does exist and should prompt clinical testing to minimize future exposure. Alternative LAs in the esters class should be explored to avoid post-operative complications in the future.

Bed Bug Bites as an Aggravating Trigger for Atopic Dermatitis

Authors and Affiliations: Kazim Jaffry, Rutgers New Jersey Medical School; Thu Truong, Rutgers New Jersey Medical School; Aleena Mahmood, Rutgers New Jersey Medical School; Alexandra Rubin, Rutgers Robert Wood Johnson Medical School; Eugenio Capitle, Rutgers New Jersey Medical School

Abstract

Background:
Atopic dermatitis (AD) exacerbation through bed bug vectors is an underreported aggravating agent, especially in vulnerable populations.

Conclusions:
Severe AD can cause patient disability and may mimic cutaneous malignancies. A workup for lymphoma is applicable. Infestations should be considered in cases of recalcitrant dermatitis, especially for patients living in an urban setting.

Readability Assessment of Online Patient Education Materials for Diaper Rash

Authors and Affiliations: Jiwon Park, Long School of Medicine; Moses Alfaro, Long School of Medicine; Ashley Zhou, Long School of Medicine; John Browning, Texas Dermatology and Laser Specialists

Abstract

Objectives:
Diaper rash or diaper dermatitis is an acute, inflammatory reaction typically involving the perineal and perianal area that affects 16-65% of babies. Considering that low health literacy correlates with poor health outcomes, examining the readability of online patient education materials could help improve presentation of medical information to caretakers.

Methods:
A Google online search of “diaper rash” was conducted on September 8th, 2023, and the top 50 results were captured via the SEOquake add-on. Four articles were excluded for lack of substantial text, being a peer-reviewed journal, or repeated link. An online readability calculator measured readability based on seven readability scales.

Results:
Of the 46 qualifying articles, we identified 38 healthcare (HC) provider authored articles and 8 unspecified or non-healthcare (NHC) providers articles that were on average written for 13-15 yrs. old (Eighth and Ninth graders). Interestingly, the average readability grade for HC articles was 8.89 versus the 11.9 for NHC articles. Overall, the averages of the readability scales were the following: Flesch Reading Ease: 58.1, Gunning Fog: 12.0, Flesch-Kincaid Grade level: 9.23, Coleman-Liau Index: 9.61, SMOG Index: 9.10, Automated Readability Index: 8.61, and Linear Write Formula: 10.2.

Conclusions:
With the American Medical Association recommending patient education materials to be written on the 6th-grade level, improving readability level may benefit caretakers seeking online information on diaper rash.

Allergic Contact Dermatitis to Isopropyl Alcohol in a 5yo Girl

Authors and Affiliations: Leanna Hansen, Medical College of Wisconsin; Keri Chaney, Medical College of Wisconsin

Abstract

Background:
Isopropyl alcohol is a rare cause of allergic contact dermatitis. It has been reported in a case series of 26 patients as well as four individual case reports. Isopropyl alcohol is a key ingredient in many products including hand sanitizer, alcohol swabs and some moisturizers.

Conclusions:
This case emphasizes the importance of a careful history and patch testing to chemicals outside of the standard series when needed. In this patient, understanding that isopropyl alcohol incited her post-vaccination contact dermatitis means she can safely receive future vaccinations.

Contact Dermatitis in an Operational Shipboard Environment

Authors and Affiliations: Serena Zhang, US Navy; Kathleen Kramer, Naval Medical Center San Diego Program; Vikas Shrivastava, Naval Medical Center San Diego Program

Abstract

Objectives:
Contact dermatitis (CD), including allergic and irritant subtypes, is one of the leading diagnoses resulting in dermatology referral in the military. With more than 90 occupational irritants listed in the Navy Safety and Occupational Health Manual, which can be referenced during expanded patch testing by dermatologists, we summarized an updated list of common culprits for CD that sailors may be exposed to while working onboard Naval vessels.

Methods:
We utilized PubMed and Google Scholar to conduct literature research and review.

Results:
We utilized PubMed and Google Scholar to conduct literature research and review. Results: Common irritants found onboard Naval vessels include but are not limited to nickel, cobalt, thimerosal, chromate, epoxy, formaldehyde, isocyanates, monoethanolamine, rubber, detergent, oil grease, and fuel.

Conclusions:
Shipboard medical officers must be aware of the prevalence and potential causes of CD in a shipboard environment. The prompt recognition and diagnosis of CD is crucial to the optimization of treatment regimen and disposition of patients when access to dermatology evaluation is limited. Avoidance of the causative agent remains the single best treatment for CD. However, when avoidance of trigger is difficult, barrier cream may be effective at preventing further progression of irritant CD while the use of moisturizer and topical steroids are effective in treating both irritant and allergic CD. Although not ideal, temporarily reassigning Sailors away from their primary work centers and even off ship may be required when logistically feasible.

Type I Hypersensitivity in Photo-Allergic Contact Dermatitis

Authors and Affiliations: Shawn Afvari, Weill Cornell Medicine; Jonathan Zippin, Weill Cornell Medical College

Abstract

Background:
Immediate reaction to light alone is deemed solar urticaria, a type I hypersensitivity reaction (HSR) to a UV-activated endogenous compound within the dermis or serum.1,2 Photoallergic contact dermatitis (PACD) is normally defined as a type IV HSR upon contact with an exogenous compound, a prohapten, that is activated by UV exposure.3 In the present manuscript, we present two unique cases of PACD presenting as a type I HSR.

Conclusions:
These cases serve to inform dermatologists of the possibility of a type I hypersensitivity PACD. It also highlights how testing for chemical intermediates in photo-allergy testing, akin to the testing of dimethylaminopropylamine in standard type IV testing, may uncover sensitization.

Contact Sensitization to Multiple Allergens: A Retrospective Cohort

Authors and Affiliations: Danny Daniely, Tel aviv medical center; Dan Slodownik, Tel-Aviv Medical Centre; Jonathan Bar, Department of Dermatology, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel

Abstract

Objectives:
Polysensitization, defined as contact sensitization to three or more allergens is an allergic phenotype with a common genetic background. Our study aims to characterize the clinical features of patients with polysensitization.

Methods:
We analyzed patch test results of 5,082 patients from a designated contact dermatitis clinic in Tel Aviv between 2012- 2022 and compared the polysensitized group to non-sensitized and olygosensitized patients.

Results:
.5% of patients were polysensitized. In the non-sensitized group there were significantly less female patients and more children ($p<0.05$) than in the polysensitized group. Asthma prevalence was linearly associated with the number of positive reactions in patch test. Polysensitized patients were more commonly suffering from hand eczema and an occupational etiology ($p<0.05$). Textile dye mix, lyral, fragrance mix II, formaldehyde, colophonium and p- phenylendiamine were more common sensitizers among the polysensitized group, while nickel sulfate, 2- hydroxyethyl methacrylate, fragrance mix 1, p-tert-butylformaldehyde resin (PTBP) and sodium metabisulfite were more common among the oligosensitized group.

Conclusions:
The association between polysensitization, asthma prevalence and sensitization to volatile allergens raises an intriguing clinical phenotype that might be mediated via alterations in the CXCL11- CCR3- IFNgama pathway.

Nickel Contact Allergy Causing Significant Dermal Indurated Plaque Beyond Patch Testing Site

Authors and Affiliations: Heidi Li, Manulife; Sophia Colantonio, University of Ottawa/The Ottawa Hospital

Abstract

Background:
Patch testing results are interpreted by International Contact Dermatitis Research Group morphologic criteria, with an extreme positive reaction (+++) described as intense erythema, infiltrate, and coalescing vesicles. To our knowledge, there have been no previous reports of patch testing causing a dermal indurated plaque beyond the patch testing site. Herein, we report a case report of a patient who developed an exuberant patch testing reaction to nickel.

Conclusions:
To our knowledge, this is the first case report of an exuberant dermal indurated plaque spreading beyond the patch testing site to nickel which is a rare reaction.

Permanent Makeup and the Allergenicity of Pigments

Authors and Affiliations: Sarah Rigali, Rosalind Franklin University Chicago Medical School; Cameron Cozzi, Northwestern University; Walter Liszewski, Northwestern University

Abstract

Objectives:
Identify pigments used in permanent makeup inks sold in the United States and review cases of allergic contact dermatitis to these pigments.

Methods:
Using internet searches, permanent makeup inks sold in the United States were identified. Safety data sheets were used to catalog pigments used in permanent makeup. A subsequent literature search was performed to identify cases of allergic contact dermatitis to these pigments.

Results:
A total of 974 permanent makeup inks were reviewed, and 79 unique pigments were identified. The average product contained four pigments. Twenty of the pigments were inorganic metals, including carbon, iron, chromium, manganese, and molybdenum. 59 pigments were organic, of which most were azo, quinacridone or anthraquinone dyes. A literature search revealed that 10 of the 79 pigments were associated with allergic contact dermatitis.

Conclusions:
Permanent makeup primarily uses organic pigments, although some metallic pigments are still used. Patch testing physicians should also be aware that some of these pigments—both organic and inorganic—are known causes of allergic contat dermatitis.

Contact Dermatitis in Skin of Color: A Retrospective Study from a Comprehensive Patch Testing Center

Authors and Affiliations: Puneet Arora, University of Minnesota Medical Shool; Caroline Brumley, Park Nicollet Health Services; Kimberly Arrington, HealthPartners Institute Program; Sara Hylwa, Hennepin Healthcare and HealthPartners Institute

Abstract

Objectives:
Background: Our understanding of contact dermatitis is based on studies predominantly composed of white patients. In the literature, there are few studies reporting patch test results in skin of color patients, especially for Hispanic, Asian and Indigenous populations.
Objective: Characterize patch testing results in patients with skin of color at our center and compare findings to the literature.

Methods:
Retrospective study included 270 patients with skin of color (102 Asian, 115 African American, 44 Hispanic, 9 Indigenous) comprehensively patch tested via the NACDG standard series and additional allergens based on history. The results were stratified into categories by self-reported race and the most frequently positive allergens were descriptively compared to those reported in white patients in the literature.

Results:
The most common positive reactions among Asian patients were fragrance mix, propylene glycol and benzalkonium chloride. In African American patients, fragrance mix, propylene glycol and benzisothiazolinone were most common. In Hispanic patients, methylisothiazolinone, nickel, and cobalt were most common. Hispanic patients presented with rash in a scalp/face/neck distribution (21, 47.7%) more frequently than Asians and African Americans (81, 37.3%). The positivity of methylisothiazolinone in all races (50, 18.5%) and p-phenylenediamine (PPD) in African Americans (11, 9.57%) was significantly higher than in white patients previously reported in the literature.

Conclusions:
Sensitization to fragrance mix and propylene glycol may be more prevalent in Asian and African American patients than white patients. Differing cultural practices may result in varying positivity rates between skin of color and white patients, emphasizing the need for patch testing reports in these populations.

Headphone Dermatitis: A Case of Allergic Contact Dermatitis to 4,4'-Diaminodiphenylmethane (MDA)

Authors and Affiliations: Puneet Arora, University of Minnesota Medical Shool; Caroline Brumley, Park Nicollet Health Services; Katherine Lee, Park Nicollet Dermatology

Abstract

Background:
Various materials in headphones have been reported to cause allergic contact dermatitis (ACD), including acrylates and rubber accelerators. 4,4'-diaminodiphenylmethane (MDA) is a precursor to 4,4'-diphenylmethane diisocyanate (MDI), a rubber accelerator used to manufacture polyurethane foams usually associated with ACD in occupational cases. While allergy to MDA is considered a marker for MDI sensitivity, we present a case of MDA as the sole sensitizing allergen from consumer headphones.

Conclusions:
Patch testing clinicians should be aware of MDA in consumer products and its potential to cause ACD in the absence of sensitization to MDI. MDA should be added to testing when clinically relevant, including cases of non-occupational exposure to polyurethane foam.

Quality of Life Assesment in Patients Diagnosed with Allergic Contact Dermatitis in Mongolia

Authors and Affiliations: Bulgan Jargalsaikhan, The National Dermatology Center of Mongolia; Zolzaya Gankhulug, The Medical University Of Medical Sciences

Abstract

Objectives:
To assess quality of life (QoL) in patients diagnosed with Allergic Contact Dermatitis.

Methods:
Retrospective review of 150 consecutive patients diagnosed between May 2023 and October 2023 in National Dermatology Center of Mongolia. We used Skindex-29 to assess the patients knowledge of their own disease and how it affects quality of life.

Results:
Approximately more than half of patients stated their skin condition affected their life very much. Comparison of the very much group with the three other groups combined (somewhat, a little, and not at all) showed a significant association between occupationally-related skin disease and poorer QoL . There was no significant association between QoL and sex, age, race, atopy, duration of dermatitis, site of dermatitis, or final diagnosis.

Conclusions:
Patients suffering from Allergic contact dermatitis regardless of their age and gender experiencing their disease affects their everyday life.

A Case Report of Allergic Contact Dermatitis to a Barrier Film Used in Peripherally Inserted Central Catheter (PICC) Care

Authors and Affiliations: Natnaelle Admassu, Medical College of Wisconsin; Keri Chaney, Medical College of Wisconsin

Abstract

Background:
A patient undergoing cancer-directed therapy developed allergic contact dermatitis (ACD) to a commonly used wound care product after insertion of a PICC.

Conclusions:
3M CavilonTM No-Sting Barrier Film is a multi-ingredient wound care product underreported as a contact allergen in the literature. Our aims are to raise awareness of its implication in ACD in patients requiring insertion of peripheral and central lines, and spur further study to characterize the ingredient within it that causes ACD.

Enhancing Wig Well-Being: Strategies to Mitigate Allergic Contact Dermatitis in Patients Who Wear Wigs

Authors and Affiliations: Jennifer Ogah, Keck School of Medicine of USC; Obarikanemi Nwogu; Uzoamaka Okoro; James Cox, Defense Health Agency

Abstract

Background:
Alopecia totalis poses unique challenges, not only in terms of its impact on self-image but also due to potential complications arising from wig usage. This case explores a patient with history of alopecia totalis and frequent wig use, who presented with allergic contact dermatitis affecting the frontotemporal and occipital scalp. While wigs are growing popularity among racial/ethnic groups, it has been a commonly used style in Black communities (or those with afro-textured hair), underscoring the importance of recognizing and addressing contact allergens in individuals using wigs.

Conclusions:
This case highlights the significance of contact allergens in patients who wear wigs, emphasizing the need for comprehensive patch testing and a tailored treatment approach, acknowledging the patient's lifestyle and self-image. Furthermore, the case underscores the importance of raising awareness about potential contact allergens in wigs and suggests avenues for minimizing risks, such as selecting alternative methods for attaching wigs (ex. Wig grip for glueless installation) and avoiding specific hair dye components. Additional management options and strategies will be discussed further.

Unmasking the Hidden Trigger: A Case of Occupational Acrylate Allergy Masquerading as a Perinasal Rash

Authors and Affiliations: Hailey Konisky, Albert Einstein College of Medicine; Aashka Suvarnakar, Georgetown University; Krishna Sharma, Georgetown University; Hubert Huho, Upstate Dermatology; Clinical and MOH's Services; A. Gregory, Upper Hudson Valley Dermatology; Albert Huho, Upstate Dermatology

Abstract

Background:
Occupational dermatitis is an underreported condition that can have severe consequences for an individual, including poor quality of life, inability to perform a job, and even job loss. In patients with new occupational dermatitis, patch testing based on Material Safety Data Sheets (MSDS) may be required.

Conclusions:
This case underscores the importance of comprehensive clinical evaluation, history taking, precise patch testing, and consideration of occupational factors in dermatological cases with unusual presentations.

A Case Report of Lymphomatoid Contact Dermatitis

Authors and Affiliations: Julia Giordano, Perelman School of Medicine at the University of Pennsylvania; Caitlyn Myrdal, Perelman School of Medicine, University of Pennsylvania; Sara Samimi, Perelman School of Medicine, University of Pennsylvania; Katherine Brown, University of Pennsylvania

Abstract

Background:
Allergic contact dermatitis may rarely present without classic eczematous lesions, but instead with variable morphologies including lichenoid, purpuric, and erythema multiforme-like eruptions. Lymphomatoid contact dermatitis is considered a "pseudolymphoma" due to clinicopathologic features of cutaneous T cell lymphoma (CTCL). We present a 58-year-old female patient with lymphomatoid contact dermatitis secondary to exposure to methylchloroisothiazolinone/ methylisothiazolinone (MCI/MI), dimethylaminopropylamine (DMAPA), and oleamidopropyl dimethylamine.

Conclusions:
Lymphomatoid contact dermatitis shares many clinicopathologic features with CTCL. Distinction between entities can be difficult, but patients with lymphomatoid contact dermatitis typically respond well to topical therapy and aggressive allergen avoidance. It is important to keep lymphomatoid contact dermatitis in mind in the appropriate clinical setting in order to spare unnecessary procedures and testing.

Acknowledgements:
I would like to thank Katherine K. Brown, MD, Sara S. Samimi, MD, and Caitlyn Myrdal, MD from the Department of Dermatology at the University of Pennsylvania for their guidance and supervision in this project.

Exfoliative Erythroderma from Occupational Colophony Exposure

Authors and Affiliations: Julia Giordano, Perelman School of Medicine at the University of Pennsylvania; Caitlyn Myrdal, Perelman School of Medicine, University of Pennsylvania; Sara Samimi, Perelman School of Medicine, University of Pennsylvania; Katherine Brown, University of Pennsylvania

Abstract

Background:
Exfoliative erythroderma, characterized by diffuse erythema and scaling, has a broad differential including contact dermatitis, psoriasis, and paraneoplastic eruption. Though typically localized, severe contact dermatitis may become generalized, leading to erythroderma. We present a 52-year-old male carpenter with exfoliative erythroderma who has significant colophony exposures from sawdust contact.

Conclusions:
Colophony is from sap of coniferous trees and is found in beauty products, sealants, instruments, and topical medications. Several reports of airborne contact dermatitis to colophony exist, including occupationally, which may explain the severe, persistent symptoms in our patient. In these reports, avoidance of contactant resulted in drastic symptom improvement. Our case exemplifies how rosin variants can be the elusive cause of exfoliative erythroderma and the importance of considering occupational hazards in contact dermatitis.

Acknowledgements:
I would like to thank Katherine K. Brown, MD, Sara S. Samimi, MD, and Caitlyn Myrdal, MD from the Department of Dermatology at the University of Pennsylvania for their guidance and supervision in this project.

Reticular Telangiectatic Erythema and Contact Dermatitis to an Implantable Cardioverter-Defibrillator: An Overlap of Two Rare Phenomena

Authors and Affiliations: Janis Chang, University of Ottawa; Melanie Pratt, University of Ottawa

Abstract

Background:
We report a case of allergic contact dermatitis to an implantable cardioverter-defibrillator (ICD) containing gold, an uncommon allergen, overlapping with reticular telangiectatic erythema, a rare reactive cutaneous manifestation to ICDs and other implantable devices.

Conclusions:
Hypersensitivity reactions to cardiac devices are rare but have a serious impact on patient outcomes, as allergen avoidance may prompt removal of a lifesaving cardiac device. Diagnosis was particularly challenging in this case due to overlap with a second rare complication of ICDs, reticular telangiectatic erythema. This highlights the importance of patch testing in diagnosis, as well as the need for further advancements in the development of implantable devices to avoid potential allergens.

Managing Allergic Contact Dermatitis due to Hair Dye in an Immunocompromised Patient

Authors and Affiliations: McKenzie Maloney, Medical College of Georgia; Mitch Hanson, Medical College of Georgia; Faizah Miah, Medical College of Georgia; Davis Diamond, Medical College of Georgia Augusta University; Adonis Imam, Medical College of Georgia

Abstract

Background:
Allergic contact dermatitis (ACD) is a common dermatosis; however, no literature exists on ACD in immunocompromised hosts.

Conclusions:
This case illustrates the original misdiagnosis of ACD and highlights the clinical complexity of this patient's health history, including cultural and financial barriers.
In particular immunocompromised patients are at risk for secondary infections and complications; thus, prompt and proper treatment of contact dermatitis is important as well as ensuring management of their underlying immunosuppression.

Epoxy Resin Contact Dermatitis in a Retired Fisherman

Authors and Affiliations: Tess Lukowiak, Rutgers Robert Wood Johnson Medical School; Samantha Pop, Rutgers Robert Wood Johnson Medical School; David Milgraum, East Orange VA Medical Center; Chinmoy Bhate; Bradlee Birchansky, Albert Einstein College of Medicine, Bronx, NY

Abstract

Background:
Allergic contact dermatitis (ACD) to epoxy resins is a well-described phenomenon. Given their wide utility in insulators, surface coatings, adhesives, and glues, contact allergy to resins has been described in construction workers, healthcare workers, and hobbyists alike.1 Here we describe a novel exposure to epoxy resins in a retired gentleman who fished daily.

Conclusions:
Likelihood of ACD was discussed with patient and he was prescribed clobetasol cream for daily use for 2-3 weeks at a time. He was seen 6 weeks later with improvement but persistence. He noted that rash on his fingers and legs improved with avoidance of epoxy resin by noted recurrence with re-exposure. As such, he declined confirmatory patch testing or biopsy. Regular use of nitrile gloves and protective clothing that is immediately removed after contamination were discussed as management options with the patient.2
This case presents a novel exposure source of epoxy-resin ACD.

Timber Troubles: Yellowheart Wood-Induced Allergic Contact Dermatitis in a Woodworker

Authors and Affiliations: Neil Vigil, Honor Health; Adina Greene, University of Arizona College of Medicine, Phoenix; Aditi Chandra, HonorHealth Dermatology Residency; Dathan Hamann, Contact Dermatitis Institute; Carsten Hamann, Saguaro Dermatology

Abstract

Background:
Allergic contact dermatitis (ACD) to wood and wood dust can affect occupational and amateur woodworkers. Hard woods such as Brazilian rosewood (Dalbergia nigra), teak (Tectona grandis) and cocobolo (Dalbergia retusa) are classically thought to be of the highest risk. Sensitizers include quinones, terpenes, and phenols such as lapachol. Patch testing with standard allergens such as colophony and with wood dust can aid in diagnosis.

Conclusions:
Yellowheart (Euxylophora paraensis) also known as Pau Amarello is found exclusively in Brazil. Its wood can range from pale yellow to golden and is used in woodworking –although its availability in the United States is limited. ACD to yellowheart has not been previously reported. This case demonstrates the utility of patch testing suspected wood dusts themselves when there is a concern for wood ACD.

The Burden of Air Pollution on Dermatitis: A Brief Report and Call to Action

Authors and Affiliations: Kathyana Santiago Mangual, Massachusetts General Hospital; Sarah Ferree, Div. of Dermatology, Washington University in St. Louis; Jenny Murase, UCSF/PAMF; Arianne Kourosh, Dept. of Dermatology, Massachusetts General Hospital, Harvard Medical School

Abstract

Objectives:
To examine the impact of air pollution intensified by the recent 2023 wildfires in Quebec, Canada, and resulting southward spread of airborne pollutants to the northeastern United States (US), on the burden of dermatitis and eczema in the Boston region.

Methods:
The association of Environmental Protection Agency (EPA) measured carbon monoxide (CO) levels in the Boston region in the months following the Canadian wildfires of 2023 with dermatology clinic visits for dermatitis and eczema at the Mass General Brigham (MGB) hospital system, 300 miles from the wildfires, was examined and compared with data from the corresponding months in 2019-2022 for historical control. No individual patient data was collected.

Results:
A notable rise in CO levels in the Boston region during the summer of 2023 correlated with a spike in dermatitis and eczema related dermatology clinic visits within the MGB hospital system.

Conclusions:
This study reveals an association between a peak in CO levels and dermatitis- related visits during the summer of 2023, highlighting the role of acute air pollution events on skin disease. Air pollution, exacerbated by wildfires, can damage the skin through the smoke and chemicals utilized for extinguishing fires, which contain multiple potential contactants, e.g., CO, particulate matter (PM2.5), and ammonium phosphates. This issue disproportionately affects vulnerable populations, including low-income communities, and the geriatric and pediatric populations. Public health and government agencies must work together to improve air purification policies and initiatives to lower the burden of skin disease, especially for vulnerable communities.

Acknowledgements:
We acknowledge the contributions of Karina Bradford, and Allan J. Bonomi from MGH Information Systems, Digital Mass General Brigham.

The Ethics of Offering Diagnostic vs. Therapeutic Options for Patients with Dermatitis: Assessing Trends in Medicare Expenditure in Patch Testing vs. Dupilumab

Authors and Affiliations: Kathyana Santiago Mangual, Massachusetts General Hospital; David Geffen School of Medicine at UCLA; Akash Rau, Michigan State University College of Human Medicine; Jane Grant-Kels, Dermatology Department, University of Connecticut; University of Florida; Arianne Kourosh, Dept. of Dermatology, Massachusetts General Hospital, Harvard Medical School; Jenny Murase, UCSF/PAMF

Abstract

Objectives:
To compare the financial allocation and utilization of dupilumab for atopic dermatitis (AD) versus patch testing to rule out concomitant allergic contact dermatitis (ACD), and to explore the ethical considerations in offering therapy without diagnostic testing in patients with recalcitrant dermatitis.

Methods:
Medicare claims and spending data for dupilumab prescriptions (for 2017-2021) and patch testing (for 2010-2022), ordered by dermatologists, was obtained from the Centers for Medicare and Medicaid Services (CMS) database.

Results:
An increase in Medicare spending for dupilumab prescriptions was observed from 2017 to 2021, while spending for patch testing diagnostics was relatively stable from 2010 to 2022. Claims for dupilumab show a consistent upward trend, contrasting with a decline in patch testing claims since 2019.

Conclusions:
This study reveals a notable disparity in Medicare expenditure on dupilumab prescriptions versus patch testing. This suggests an increasing preference for dupilumab in managing AD, and potential underutilization of patch testing in identifying concomitant ACD, which is a common under identified factor in presumptive AD patients. Given the importance of appropriate diagnostic testing prior to therapeutic trials, dermatologists should discuss and offer patch testing to presumptive AD patients with clinical involvement suggestive of concomitant ACD, thereby respecting and promoting patient autonomy in treatment decisions. Upholding justice also necessitates addressing barriers to patch testing, as inadequate insurance coverage and limited accessibility. Dermatologists can promote non-maleficence by prioritizing accurate diagnosis with patch testing, thereby reducing both financial impacts and burden of skin disease in patients with recalcitrant eczematous dermatitis.

Metal Series Patch Testing: Updated Results from the Past 13 Years

Authors and Affiliations: Phillip Link, Mayo Clinic; Ganesh Maniam, Mayo Clinic School of Graduate Medical Education; Jenny Link, Mayo Clinic Department of Dermatology

Abstract

Objectives:
Previous studies have identified the most common metal allergens not present in standard patch test series. This study sought to update these results with a large cohort who underwent metal series patch testing over the past decade, with a goal of identifying the most common allergens and their clinical relevance.

Methods:
An IRB-exempt retrospective review analyzed the outcomes of 379 patients who underwent patch testing to a series of 53 unique metal compounds from 2009 – 2022 at a large academic institution. The most frequently positive and clinically relevant allergens were identified.

Results:
Metals with the highest allergic patch testing reaction frequency were nickel (allergic rate, 30.8%), manganese (30.4%), gold (20-28.8%, depending on formulation), chromium (25.4%), titanium (23.7%), cobalt (16.4-19.9% depending on formulation), palladium (19.9%), amalgam (18.6%), ferric chloride (18.3%), and ticonium (16.4%). Compared to prior studies, nickel, gold, manganese, chromium, cobalt, palladium and ticonium continued to have high allergic rates. Of these, nickel had the highest relevancy, followed by cobalt and gold. Titanium, amalgam, and ferric chloride had higher allergic rates than previously reported; however, these were thought to be clinically relevant less than a quarter of the time.

Conclusions:
Many metals not in the standard series continue to be associated with positive patch test reactions. Nickel, manganese, and gold had the highest allergic rates. Nickel, cobalt, and gold were most commonly relevant. Titanium, amalgam, and ferric chloride were more frequently positive compared to the prior decade, though the clinical relevance of positive tests to these metals tended to be lower.

Therapeutic Effects and Mechanisms of Hydroxy-a-Sanshool in Atopic Dermatitis

Authors and Affiliations: Jinxin Qi, West China Hospital, Sichuan University; Xian Jiang, West China Hospital, Sichuan University

Abstract

Objectives:
Atopic dermatitis is a chronic inflammatory skin disorder characterized by severe pruritus, significantly impacting patients' quality of life. Current treatments for atopic dermatitis have limitations. This study aims to explore the therapeutic potential of Hydroxy-a-sanshool (HAS) for treating atopic dermatitis.

Methods:
In the DNCB-induced mouse model of atopic dermatitis, we administered HAS at varying concentrations and assessed skin lesions, itchiness, epidermal thickness, and mast cell infiltration. Blood and skin samples were collected for ELISA, RT-PCR, Western blot, and single-cell sequencing. Single-cell sequencing has been done in mouse skin samples. In in vitro model of atopic dermatitis, in a human keratinocyte (HaCaT cells) model of IFN?/TNF a co-stimulation, CCK8 assay, RT PCR, and western blot were applied to assess cytotoxicity, levels of inflammatory factors and proteins related to inflammatory cell death.

Results:
In the animal model, the HAS treatment group exhibited reduced skin lesions, spleen index, serum IgE levels, and mRNA levels of IL-6, IL-17, IFN gamma, and TNF alpha, as well as decreased levels of pyroptosis-related proteins (IL-1ß, caspase-11) and apoptosis-related protein (cleaved caspase 3), which were concentration-dependent. Analysis of scRNA sequencing indicated significant differences in fibroblasts, macrophages, and neutrophils between the HAS treatment group, model group, and blank control group. In vitro in the HaCaT models, HAS at concentrations ranging from 2.5-40 µM showed no cytotoxicity.

Conclusions:
The study demonstrates that HAS has therapeutic effects on mouse and cell models of atopic dermatitis, resulting in reduced levels of inflammation. Further research will be conducted to explore the underlying mechanisms.

Methylisothiazolinone Sensitisation in New Zealand

Authors and Affiliations: Harriet Kennedy, Auckland City Hospital; Hyun Kyoung Lee, Middlemore Hospital, Auckland, New Zealand

Abstract

Objectives:
Methylisothiazolinone (MI) has been a leading global cause of preservative contact allergy over the last decade with very high rates seen in Australia, however rates of MI allergy in New Zealand are unknown. New Zealand has liberal regulations for maximum MI concentrations in cosmetic products compared to other western countries. The aim of this study was to document the prevalence of MI sensitisation in New Zealand.

Methods:
This retrospective study included patients patch tested from 2008 to 2022 in Auckland, New Zealand. Demographic factors were recorded along with positive and relevance rates for MI and methylisothiazolinone/methylchloroisothiazolinone (MI/MCI) at the final reading.

Results:
Over the study period 1049 patch tests were performed. Overall 3.9% had a positive reaction to MI and 7% to MI/MCI. MI was not tested sequentially in the baseline series until 2015 and the initial positivity rate was 5.3% with a peak incidence of 11.9% in 2017, declining to 6.4% in 2021.The most common source of MI exposure was shampoo and conditioner (31.7% of all relevant reactions).

Conclusions:
The prevalence of allergy to MI in New Zealand appears to be lower than Australia but follows a similar trend with incidence declining. There is inadequate access to patch testing in New Zealand, meaning many cases of MI allergy may be undiagnosed.

Acknowledgements:
Locality ethics approval for this study was granted by Auckland City Hospital Research Office.
The authors have no funding or financial relationships to declare.

Experience Using the Shared Medical Appointment (SMA) for the Patch Testing Consultation

Authors and Affiliations: John Anthony, Cleveland Clinic Foundation; Jessica Wampleman, Cleveland Clinic Foundation; James Taylor, Department of Dermatology, Cleveland Clinic

Abstract

Objectives:
The use of the Shared Medical Appointment (SMA) has been associated with increased clinical efficiency and improved patient satisfaction in multiple medical specialties, including dermatology. Additionally, SMAs offer the potential for an enhanced educational experience for patients over traditional appointments. However, the use of the SMA in the practice of patch testing has not previously been reported. We describe our experience piloting SMAs in our practice for the consultation and education of our patch testing patients.

Methods:
About 8 weeks prior to the first pilot SMA, patients referred to our clinic were offered either a traditional consultation appointment or an appointment in an SMA. Typically, SMA appointments offered earlier availability by at least several weeks. At the time of the SMA, up to 8 patients (and accompanying family members) were seated in a conference room. History forms were completed and one of the attending physicians (J.A) provided an educational presentation discussing the background, process, expectations, and risks of patch testing. Subsequently, the patients were evaluated separately in private exam rooms to briefly examine affected areas of skin, and to assign appropriate patch testing panels.

Results:
Since January 2023, a total of 329 patients participated in SMA patch test consultations, while another 297 patients were seen in a traditional consultation setting. Anecdotally, generally positive feedback was received by clinic staff from those who participated.

Conclusions:
The SMA represents a potential opportunity to offer patch testing patients an enhanced educational experience and may enable increased efficiency for the patch testing providers.

Rate of Patch Test Reactions to Thimerosal: A Retrospective Review

Authors and Affiliations: Rayvanth Chappidi, NYU Grossman School of Medicine; Rachel Cymerman, NYU Medical Center; David Cohen, New York University Grossman School of Medicine; Theodora Karagounis, NYU Grossman School of Medicine; Emily Milam, NYU Langone Health

Abstract

Objectives:
Thimerosal is an organomercury compound historically incorporated into consumer and medical products. In 2001, the FDA mandated removal of thimerosal from childhood vaccines, notably reducing its commercial utilization. With less consumer exposure, we hypothesize that thimerosal patch test reactivity has since decreased. To test this hypothesis, we aimed to quantify patch test reactivity to thimerosal compared to previously reported estimates.

Methods:
This is a retrospective chart review of patch tested patients at the NYU Department of Dermatology between January 2nd, 2010 and June 30th, 2023. Included patients were tested to an extended NYU series (which includes the North American Contact Dermatitis Group (NACDG) standard series). Chi square goodness of fit testing was performed to compare reactivity rate to published literature.

Results:
Of 1520 patch tested patients, 7.04% (n=107) reacted to thimerosal, significantly less compared to rates published from 1994-2000 (10.26%; $p<0.0001$). Stratified by age: children (0-18 years, n=22) had a 0% positivity rate (vs 13.3%, $p=0.0968$); adults (19-64 years, n=1056) had a 7.67% positivity rate (vs 10.82%, $p<0.005$); and elderly adults (=65 years, n=442) had a 5.88% positivity rate (vs 7.04%, $p=0.370$). Patients born after removal of thimerosal from vaccines in 2001 (= 22 years, n=66) had a low positivity rate at 1.51%.

Conclusions:
We observed a significant decline in thimerosal reactions across all ages compared to published rates prior to thimerosal's removal from vaccines. The rate of positivity in =22-year-olds born post-FDA mandate is strikingly low. These findings suggest that regulatory changes curtailing use of potential allergens can significantly decrease allergen sensitivity.

Analyzing the Financial Burden of Contact Dermatitis in the Emergency Department Setting

Authors and Affiliations: Michael J. Diaz, University of Florida College of Medicine; Jasmine T. Tran, Indiana University School of Medicine; Sarah J. Aleman, Louisiana State University School of Medicine; Kamil Taneja, Stony Brook University Renaissance School of Medicine; Karan Patel, Rowan University Cooper Medical School; Kelly H. Tyler, MD, Ohio State University Wexner Medical Center; Dathan J. Hamann, MD, Contact Dermatitis Institute

Abstract

Objectives:
Contact dermatitis (CD) imposes a significant financial burden on individuals and healthcare systems. Therefore, we aimed to assess the patient and hospital factors that influence patient charges for CD care.

Methods:
We queried the Nationwide Emergency Department Sample (NEDS) for patients presenting to U.S. emergency departments (EDs) with a primary diagnosis of unspecified CD (ICD-10: L25.9) in 2019. Predictive factors for patient charge amount were determined by multivariable linear regression, with significance set at $P<0.05$. Patient charges were converted to 01/2023 U.S. dollar value.

Results:
A total of 121,460 patients were identified. Within this population, 6,042 encounters had either incomplete data or could be predicted perfectly by a single factor and were thus ineligible for regression analysis. The mean total ED charge for CD treatment was $1398. Total ED charges were independently associated with patient age with ages 0-17 as the comparator (ages 18-44, ??+$263; ages 45-64, ??+$373; ages 65+, ??+$339), female sex (??+$55), no charge visits with Medicare as the comparator (??+$461), comorbidity with Charlson Comorbidity Index (CCI) score of 0 as the comparator (CCI score of 1, ??+$272; CCI score of 2, ??+$475; CCI score of 3+, ??+$1,217), and patient race and ethnicity with White as the comparator (Hispanic, ??+$420; Asian or Pacific Islander, ??+$276; Native American, ??-$267; other, ??+$717).

Conclusions:
Older age, female sex, Medicare insurance status, elevated CCI score, and non-White race and ethnicity were associated with higher ED charges among CD patients. Study limitations include a lack of state-level granularity and restriction to a single year.

Evaluation of Noninvasive Imaging Modalities for Allergic Contact Dermatitis: A Scoping Review

Authors and Affiliations: Tara Ghalambor, University of Arizona College of Medicine - Phoenix; Benjamin Buttars, Honor Health Dermatology Residency, Phoenix, Arizona, USA; Dathan Hamann, Contact Dermatitis Institute

Abstract

Objectives:
While patch testing is the gold standard for diagnosing allergic contact dermatitis (ACD), the subjective nature of its interpretation has led to the exploration of noninvasive imaging modalities to create a more objective form of evaluation of this disease. This review discussed the current imaging modalities used in analyzing patch test reactions.

Methods:
PubMed was searched using the terms reflective confocal microscopy OR optical coherence tomography OR thermography OR camera OR ultrasound OR laser doppler flowmetry AND patch testing AND contact dermatitis, which yielded 183 articles. After removal of duplicates and assessment of relevance, 59 articles remained.

Results:
From our search, the modalities explored include optical coherence tomography, reflective confocal microscopy, thermography, autofluorescence, high-frequency ultrasound, laser doppler flowmetry, optoacoustic mesoscopy, 3D cameras with deep learning models, and macro-video documentation. Parameters that each modality measured, such as cellular differences between irritant and allergic reactions and increasing clinical patch test scoring, and ability to differentiate doubtful reactions are discussed. Advantages and disadvantages of modalities were compared as they were listed in literature.

Conclusions:
While many noninvasive imaging modalities have emerged and provide insight into in vivo characteristics of ACD, further evaluation of modalities with large scale clinical trials are needed to achieve the goal of having reliable objective patch test evaluation.

Allergic Contact Dermatitis of the Scalp: A Review of an Underdiagnosed Entity

Authors and Affiliations: Jonathan Hwang, University of Pittsburgh School of Medicine; Colleen Beatty, West Virginia University, Department of Dermatology; Kuzma Khobzei, Khobzei Clinic; Viktoryia Kazlouskaya, Khrom Dermatology

Abstract

Objectives:
This study reviews the potential under-diagnosis and misdiagnosis of scalp allergic contact dermatitis (ACD) and explores ways to improve diagnostic accuracy. We hypothesize that it is commonly mistaken for other disorders due to overlapping symptoms and unique clinical presentations.

Methods:
We conducted an extensive literature review to identify diagnostic challenges, common misdiagnoses, and diagnostic approaches for scalp ACD, focusing on standard versus targeted patch testing techniques.

Results:
Scalp ACD, often misdiagnosed as seborrheic dermatitis due to similar symptoms, has atypical presentations such as hair thinning, hair loss, and erythematous lesions affecting neighboring regions. Trichoscopy can help distinguish scalp ACD, identifying its patchy distributions of thin white scales, in contrast to seborrheic dermatitis's even yellow scaling. Standardized patch testing further contributes to diagnostic errors, with a study reporting 83% of patients who tested negative with standardized patch tests were positive when using their personal products. Individualized patch testing is more effective in identifying causative allergens and accurately diagnosing scalp ACD.

Conclusions:
Several factors contribute to scalp ACD's misdiagnosis for conditions like seborrheic dermatitis. The significant discrepancy in ACD detection rates between personalized and standardized patch tests emphasizes the importance of using patient-specific products in diagnostic testing. Incorporating scalp ACD more readily into one's differential, employing individualized patch testing with trichoscopy, and accounting for neighboring symptomatic areas are all crucial elements in increasing diagnostic accuracy for scalp ACD. The study's limitations include a reliance on secondary quantitative analysis, prompting the need for future investigation.

Drug Survival of Alitretinoin for Chronic Hand Eczema: A Danish Nationwide Cohort Study

Authors and Affiliations: Amalie Rønnstad, Department of Dermatology, Bispebjerg Hospital; Mia-Louise Nielsen, Department of Dermatology, Bispebjerg Hospital; Jacob Thyssen, Bispebjerg Hospital; Alexander Egeberg, Department of Dermatology, Bispebjerg Hospital, Denmark

Abstract

Objectives:
Since 2008, alitretinoin, a synthetic vitamin A-derivative, has been approved for severe chronic hand eczema (CHE) in Denmark. The objective was to assess alitretinoin drug survival in CHE patients.

Methods:
This cohort study included all CHE patients initiating treatment with alitretinoin in Denmark between October 20, 2008, and December 31, 2020. Off-label indications were excluded. Patients were followed from the first prescription until December 31, 2021, allowing for at least one year of follow-up. Kaplan-Meier curves visualized time to treatment failure, and Cox regression models (age, sex, hyperkeratotic phenotype (yes/no), prior use of systemics) estimated adjusted hazard ratios (aHR) with 95% confidence intervals (CI).

Results:
A total of 837 CHE patients were included (58.2% (n=487) women) with a median (IQR) age of 53 (44-61) years. Of those, 67.1% (n=562) had hyperkeratotic and 27.6% (n=231) had non-hyperkeratotic CHE. More systemics were used in hyperkeratotic vs. non-hyperkeratotic CHE. Median (IQR) drug survival was 107 (59-174) days overall, 115 (60-185) days in hyperkeratotic, and 100 (58-155) days in non-hyperkeratotic CHE. After 3, 6, 9, and 12 months 40.4%, 77.2%, 90.4%, and 94.4% had discontinued alitretinoin, respectively. The hazard of alitretinoin discontinuation was lower in patients with hyperkeratotic CHE (aHR=0.79, 95% CI 0.67-0.93) compared to patients with non-hyperkeratotic CHE. No differences in hazard were observed based on age, sex, or prior use of systemics.

Conclusions:
Drug survival of alitretinoin in CHE was short, but slightly longer for hyperkeratotic vs. non-hyperkeratotic CHE phenotypes. Discontinuation hazard was independent of sex, age, and previous systemic use.

Comparing Lymphocyte Transformation Test and Skin Patch Testing in Patients Listed for Temporomandibular Joint Replacement at Massachusetts General Hospital

Authors and Affiliations: Shaina George, Massachusetts General Hospital, Harvard Medical School; JiaDe Yu, Massachusetts General Hospital

Abstract

Objectives:
Metal allergy testing is commonly assessed with skin patch testing (SPT), the gold standard for detecting hypersensitivity reactions. Lymphocyte transformation test (LTT) also exists to evaluate for metal allergies. In patients with temporomandibular joint (TMJ) arthropathies, metal allergy testing is usually conducted prior to total joint replacement (TJR) to determine the metal of choice for the prosthesis. The aim of this study is to assess sensitivity and specificity of LTT and agreeability between LTT and SPT.

Methods:
REDCap based retrospective analysis of patients with TMJ arthropathies requiring TJR referred to Massachusetts General Hospital for LTT and SPT from 2018 to 2023.

Results:
Of the 57 patients included, 30 patients had completed both LTT and SPT. The mean age was 48.3 years, 80% were female and 96.7% self-reported as White. Of these patients, 40% reported a history of jewelry allergy and 10% reported a history of metal allergy. The results of LTT and SPT were limited with regards to aluminum, cobalt, chromium, molybdenum, zirconium and iron. 52.9% of patients who tested positive for any concentration of nickel on SPT also tested positive on LTT. 100% of patients who tested positive for any concentration of vanadium on SPT also tested positive on LTT. Agreement between LTT and SPT for nickel was 56.7% and for vanadium was 86.7%. The sensitivity of LTT calculated among our patients is 58.3% and the specificity is 66.7%.

Conclusions:
Between the two tests, there was most agreeability between LTT and SPT on vanadium allergy, followed by nickel allergy. LTT in comparison to SPT has a moderate sensitivity and specificity.

Investigating the Relationship Between Ingredient Number and Allergic Potential in Facial Cleansers

Authors and Affiliations: T. Austin Black, McGovern Medical School; Amna Ali, McGovern Medical School; Megan Rogge, UT Texas Medical Center at Houston

Abstract

Objectives:
Contact dermatitis, an inflammatory skin condition resulting from exposure to allergens or irritants, is widespread. Personal care products like facial cleansers often contain diverse ingredients that may induce these reactions. While not new, the belief that products with fewer ingredients are less likely to contain allergens lacks verification in the literature. This study aims to establish the validity of this notion and explore the relationship between ingredient number and allergic potential in facial cleansers.

Methods:
Ingredient lists from Amazon.com's top 100 best-selling facial cleansers were collected and analyzed for seven common contact allergens. Correlation calculations examining ingredient count and number of common allergens were performed.

Results:
The total ingredient number per item ranged from 4 to 42 (mean 20.0), while the number of common allergens ranged from 0 to 8 (mean 1.70). A positive correlation ($r = 0.608$, $p<0.001$) was identified between ingredient number and the number of common allergens within each item. Products with zero-common allergens exhibited an average of 12.29 ingredients, while those with one common allergen had 19.68. Multiple-allergen products contained an average of 22.48 ingredients, significantly more than zero-allergen products ($p<0.001$).

Conclusions:
Simply put, our study supports the general belief that the likelihood of common allergens in facial cleansers increases with the number of ingredients. Moreover, products with 12 or fewer ingredients exhibit a statistical tendency to be common allergen-free. While personalized patch testing remains the gold-standard, these insights provide a practical reference ingredient number for those seeking to avoid common allergens in facial cleansers.

A Cross-Sectional Analysis of Contact Allergens in Depilatory Products

Authors and Affiliations: Sophia Neman, Medical College of Wisconsin; Ruhi Kanwar, Harvard Medical School, Boston, MA; Karissa Libson, Ohio State College of Medicine, Columbus, OH; Kelly Frasier, Nuvance Health, Poughkeepsie, NY; Kelly Tyler, Ohio State University Wexner Medical Center; John Trinidad, Department of Dermatology, Massachusetts General Hospital, Boston, MA; David Younessi, Northwestern University Feinberg School of Medicine; John Lin, University of Pennsylvania Perelman School of Medicine

Abstract

Objectives:
The purpose of this study is to conduct a cross-sectional analysis of contact allergens in depilatory products.

Methods:
We searched the phrases depilatory creams and hair removal creams on Amazon, Sephora, Ulta Beauty, Walmart, and Target and selected the 100 bestselling products; non-depilatory and duplicated listings were excluded. The vehicle, ingredients, price, average customer rating, number of customer reviews, country of manufacturing, and marketing claims were recorded. Ingredients were cross-referenced against the American Contact Dermatitis Society and North American Contact Dermatitis Group's databases to identify potential allergens. The association of variables was assessed in Stata using descriptive statistics, t-tests, ?2 tests, one-way ANOVA tests, and Pearson's and Spearman's correlation analyses (p-value < 0.05).

Results:
In total, 80 depilatory products were included in this study, 27 of which (33.8%) did not have an ingredient list online or on external packaging. In total, 37/53 products contained at least 1 allergen and 17 unique allergens were identified (Table 1). Sodium benzoate, tocopherol, and propylene glycol were the most common. There was no statistically significant relationship between the presence or absence of allergens and marketing claims such as "dermatologist tested", "safe for sensitive skin", "gentle", or "hypoallergenic". There was no statistically significant difference in the popularity of allergen or non-allergen containing products (Table 2-3).

Conclusions:
Consumers should be wary of marketing claims that report hypo-allergenicity, as there is no demonstrated correlation between such claims and allergenic contents. Study limitations included potential for incomplete data collection due to the variability in information that was available for each product.

Assessing Dermatitis of Povidone Iodine in Perioperative Settings: A Scoping Review

Authors and Affiliations: Nabeel Ahmad, University of Houston College of Medicine; Guillermo Saldana, University of Houston College of Medicine; Amanda Hernandez, University of Houston College of Medicine

Abstract

Objectives:
Povidone-iodine (PVP-I) serves as a prevalent antiseptic in preoperative skin preparation, significantly reducing surgical site infections. Despite its efficacy, the potential association with contact dermatitis remains incompletely explored. Our objective was to conduct a scoping review examining dermatitis occurrences post-PVP-I administration in various surgical procedures.

Methods:
We systematically searched Pubmed, Web of Science, CINAHL, and Medline databases utilizing relevant MESH terms and keywords. Included were cohort studies, clinical trials, and case series involving PVP-I use across all age groups during surgical procedures. Our exclusion criteria comprised articles mentioning individuals previously allergic to iodine-containing compounds, non-surgical patients, and those published more than 15 years ago.

Results:
Following duplicate removal, 246 articles underwent screening, with 9 meeting the inclusion criteria for full-text analysis. Encompassing 675 patients who received PVP-I post-surgery, 62 developed dermatitis (9.2%). The mean onset age of dermatitis post PVP-I administration was 46.5 years (range: 15 to 83 years). Among 42 patients who underwent patch testing, 28 tested positive (66.67%). Notably, alternative antiseptics such as chlorhexidine or olanedine were identified for patients displaying adverse reactions to iodine-containing compounds.

Conclusions:
Our scoping review contributes nuanced insights into a potential dermatological outcome associated with povidone-iodine utilization in surgical settings. These findings provide valuable information for tailored approaches to perioperative skin preparation and highlight alternative antiseptic options for individuals sensitive to iodine-containing compounds.

Pseudo-Psoriatic Nail Dystrophy Resulting from Cosmetic Nail Products: A Systematic Review

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Abstract

Objectives:
Pseudo-psoriatic nail dystrophy, a form of allergic contact dermatitis (ACD) secondary to nail product use, often mimics nail changes associated with psoriasis. Literature regarding its causes is limited and diagnostic delays may occur.
Objective: To examine the triggers of pseudo-psoriatic nail changes and suggest management strategies.

Methods:
A PRISMA-based systematic review of PubMed was conducted from database inception to December 10, 2023. Search terms included “nail disease”, “nail dystrophy’, “psoriatic nails”, “pseudo-psoriatic”, or “onycholysis” in association with “nail polish/ cosmetics”, “allergy”, and “dermatitis”. Inclusion criteria encompassed documented use of cosmetic nail products like polish, glue, and hardening agents associated with nail changes. Studies addressing psoriatic or psoriasis-like nail changes were also included while cutaneous reactions unrelated to the nail unit, irritant contact dermatitis, or mechanical damage were excluded.

Results:
Of the 55 returned records, 26 were excluded due to a review of nail products alone, clinician recommendations, or ACD with a lack of associated nail changes. Thirteen records met inclusion criteria and had 15 documented patient cases. Each showed evidence of pseudo-psoriatic and dystrophic nail changes linked to nail product use. Of the 10 patients who underwent patch testing, 5 demonstrated positivity to methyl methacrylates.

Conclusions:
Clinically distinguishing pseudo-psoriatic nail dystrophy from psoriatic onychodystrophy is challenging. Methyl methacrylates are a common trigger of pseudo-psoriatic nail dystrophy. Patients with dystrophic nail changes may benefit from prompt referral to patch testing.

Impact of Allergen Avoidance on Burning Mouth Syndrome and Recurrent Aphthous Stomatitis: Case Series from Two Difficult Chronic Oral Conditions

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Abstract

Objectives:
Burning mouth syndrome (BMS) and recurrent aphthous stomatitis (RAS) are chronic and often recalcitrant conditions that impart significant quality of life burden. Prior case series have proposed that these conditions may be exacerbated by contact allergens in some patients. We aimed to evaluate the degree of disease improvement in BMS and RAS with avoidance of patch test-positive allergens.

Methods:
We reviewed patient charts seen at University of Utah Health from 01/01/2015-09/01/2022 for RAS or BMS. Patch testing results and clinical course were retrieved via chart review. We identified 69 patients with BMS, 14 of whom underwent patch testing. We identified 253 patients with RAS, of whom 14 received patch testing.

Results:
We identified 69 patients with BMS (14 patch tested) and 253 RAS patients (14 patch tested). In patients with BMS, patch testing was positive in 12/14 and 6/12 reported allergen avoidance attempts. Disease improvement occurred in 5/6 patients. Successful allergen avoidance regimens included avoiding products with Balsam of Peru, nickel, methylisothiazolinone, peppermint oil, and dental metal removal. RAS patients were patch-test positive in 11/15 and 6/11 reported allergen avoidance (2/6 had disease improvement). Successful avoidance regimens included avoiding Balsam of Peru, gallates, benzoic acid, sodium metabisulfite and fragrances.

Conclusions:
In our cohort, patch-test positivity was frequent and avoiding identified allergens was associated with disease improvement, especially in BMS. We recommend patch testing in patients with BMS and recalcitrant patients with RAS.

Improved ACD-11 and Dermatology Life Quality Index Scores After Patch Testing in Dermatitis Patients

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Abstract

Objectives:
Our objectives are to investigate the impact of patch testing on quality of life (QoL) and explore factors that impact QoL outcomes.

Methods:
This IRB-approved registry included patient demographics, clinical findings, investigator global assessments (IGA), and patch test results. QoL questionnaires (ACD-11 and Dermatology Life Quality Index [DLQI]) prior and 2-6 months following patch testing were analyzed with Stata® software.

Results:
374 patients with pre- and post-patch test assessments were identified. Post-patch testing, global assessments of patients' self-reported QoL and skin severity, aggregate DLQI, aggregate and domain-specific ACD-11 assessments significantly improved ($p=0.0001$). IGA significantly improved after patch testing ($p<0.0001$). Median follow up time was 3 months. Patch patients, regardless of sex, race, ethnicity, total relevant allergens, number of allergens correctly recalled, or body locations of involvement, demonstrated significant improvements in QoL ($p<0.05$). Factors associated with post-patch improvement in DLQI or ACD-11 were lower initial body surface area (BSA) involvement and history of atopic dermatitis (AD). Improved IGA was associated with allergic contact dermatitis (ACD) diagnosis. 61% of patients correctly recalled all their culprit allergens.

Conclusions:
Patch testing provides benefit to patients in multiple facets including IGA and QoL measures. These improvements occur irrespective of ACD diagnosis, total allergens identified, sex, race, or ethnicity. Those with higher odds of improved QoL measures are patients with lower baseline BSA or history of AD. Patients had a higher rate of allergen recollection than previously reported.

Patient Perceptions Towards Patch Testing

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Abstract

Objectives:
Allergic contact dermatitis (ACD) is a type of delayed hypersensitivity reaction with rising prevalence, significantly impacting patients' quality of life (QoL). (1,2) Patch testing, the gold standard for diagnosing ACD, has been shown to improve patients' QoL, independent of test results. (2) Nevertheless, the literature remains limited on patient reported expectations and attitudes towards patch testing.

Methods:
Patients undergoing patch testing at an academic center from September 2022 to September 2023 were enrolled prospectively under IRB approval. They completed surveys, including ACD-11 and DLQI instruments, before patch testing (Day 0) and after counseling on test results (Day 3) to assess quality of life, attitudes toward testing, allergen avoidance, and disease severity.

Results:
Out of 111 participants, 63 tested positive for at least one allergen, and 48 tested negative. Compared to those who tested negative, patients with positive tests were more likely to report ACD-11 and DLQI questions related to skin unpredictability ($p=0.025$), concern about irritant exposure ($p=0.04$), expectations of improvement from patch testing ($p=0.03$), and skin discomfort ($p=0.042$). However, Day 0 ACD-11 and DLQI scores showed no significant differences between outcome groups. Furthermore, there was no significant difference in responses to "I expect my results to be positive," before testing or to "I am glad I did patch testing" after testing.

Conclusions:
This study suggests that baseline patient symptom profiles are similar between those who ultimately test positive and negative. Furthermore, patients express similar attitudes toward patch testing prior to starting and are similarly satisfied with patch testing regardless of test results.

Global Burden, Trends, and Inequalities of Contact Dermatitis from 1990 to 2019: An Analysis from the Global Burden of Disease Study 2019

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Abstract

Objectives:
This study aimed to investigate the levels and trends of prevalence, incidence, and disability-adjusted life years (DALYs) for contact dermatitis (CD) from 1990 to 2019, with a projection of its burden by 2030.

Methods:
Epidemiological data on CD were sourced from the Global Burden of Disease (GBD) study 2019. An analysis of CD burden was conducted globally and across subgroups (including sex and socio-demographic index [SDI]) from 1990 to 2019 using R software. To quantify temporal trends, Joinpoint Regression Model (JRM) was employed to calculate the Average Annual Percent Change (AAPC) of CD from 1990 to 2019, and the Annual Percent Change (APC) within specific time segments. The Bayesian Age-Period-Cohort (BAPC) modeling was applied to project the CD burden up to 2030.

Results:
The global burden of CD remained relatively stable between 1990 and 2019. A consistently higher burden among females was revealed compared to males. High SDI regions exhibited the lowest overall burden of CD, while middle SDI regions bore the heaviest burden. JRM indicated a decline in global CD burden from 1990 to 1994, followed by a gradual increase from 1994 to 2019. The AAPC in prevalence, incidence, and DALY rates between 1990 and 2019 were -0.01%, 0.02%, and 0%. Projections suggest that by 2030, the age-standardized prevalence rate per 100,000 population for global CD will reach 1256.5 (95% UI [uncertainty interval]: 1101.6-1411.4), the incidence rate is projected to be 3412.9 (95% UI: 3004.4-3821.3), and the DALY rate is estimated to be 31.3 (95% UI: 27.1-35.4).

Conclusions:
The past three decades witnessed disparities in CD burden across different genders, nations, and social-economic development levels. From 1994 to 2019, there was an upward trend in global CD burden, a trend projected to persist until 2030.

Construction Workers: Clinical Features and Workplace Prevention

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Abstract

Objectives:
Construction workers (CW) are at higher risk of occupational skin disease. The objectives of the study were to examine the clinical features and workplace prevention activities of construction workers with a diagnosis of occupational skin disease (OSD) and compare these features with other workers with OSD seen in a tertiary referral centre in Toronto, Canada.

Methods:
Demographic, clinical, patch test and workplace prevention information was collected for patients seen in a tertiary referral patch test clinic between 2012 and 2022. The database is approved by the institutional REB and signed consent to participate was obtained. Basic descriptive statistics were utilized.

Results:
There were 1505 workers, including 81 CW (mean age 42, 96% male). Overall, 62% of the CW had a diagnosis of occupational allergic contact dermatitis. CW were more likely to work in a small workplace and were less likely to have received workplace safety training and file a compensation claim. Twenty per cent had occupationally relevant responses to epoxy and 17% to chromium, both statistically significantly higher than the other workers. There was a trend to have higher occupationally relevant positives to carba mix and thiuram mix. Occupational irritant contact dermatitis was diagnosed in 62%.

Conclusions:
Collection of detailed workplace as well as clinical information in an occupational patch test database facilitates a better understanding of the diagnosis and also the workplace characteristics that may place construction workers at increased risk for OSD. This provides useful information that can be used to target workplace prevention activities.

Acknowledgements:
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Dupilumab for Chronic Hand Eczema: A Systematic Review

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Abstract

Objectives:
Chronic hand eczema (CHE) is a distressing and pervasive dermatologic condition, and effective treatment is challenging; we evaluated the novel IL-4/13 inhibitor, dupilumab, in the treatment of CHE in a systematic review.

Methods:
PubMed and clinicaltrials.gov databases were searched for terms dupilumab and chronic hand eczema/dermatitis, including CHE subtypes (dyshidrotic, hyperkeratotic, allergic, contact, atopic, occupational, vesicular). 24 records met inclusion and exclusion criteria for evaluation, comprising 21 completed study publications and three clinical trials.

Results:
One randomized controlled trial, one multicenter prospective study, two prospective observational studies, one retrospective study, nine case series, and seven case reports were included in the analysis with 317 total patients. Studies showed significant improvement or complete resolution of CHE in most patients treated with dupilumab by four to sixteen weeks post treatment, and results were sustained for study duration with continued treatment and in some cases after discontinuation of treatment. Significant reductions in hand eczema severity scores and significant improvement in quality-of-life scores were also noted. Efficacy was reported in some cases of hyperkeratotic hand eczema and contact hand dermatitis; however, results in these subtypes were mixed and overall efficacy decreased compared with high consistent efficacy in other CHE subtypes. Patients with current/previous atopic dermatitis had increased improvement scores compared to those without. The most common adverse effects were conjunctivitis (10.6%), facial erythema/dermatitis (1.7%), diarrhea (1.3%), and ocular pruritus (0.9%).

Conclusions:
Dupilumab shows therapeutic potential in treating CHE. Further randomized controlled studies of dupilumab use in CHE and CHE subtypes are needed.

Targeting Toll-Like Receptors in Contact Dermatitis: Essential Updates on Therapeutic Management

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Abstract

Objectives:
Toll-like receptors (TLRs) play a key role in innate immunity though recognition of tissue injury and infection. Activation of TLRs have a critical role in contact dermatitis (CD), however there are limited existing data on pharmacological management of TLRs in CD. We sought to identify established and experimental therapeutics that block TLR signaling, and whether these may be potentially treatments for CD.

Methods:
A literature search was conducted on PubMed using recent clinical trials, review articles, and case series/reports from 2010 onwards. Anti-TLR therapeutics that were currently undergoing clinical trials were included.

Results:
There are 10 known TLRs. TLR2, TLR3, and TLR4 are directly involved in the pathogenesis of CD. There are no existing therapeutics that are used to directly block TLRs in CD. However, five experimental therapeutics that target TLR signaling were identified to be potential candidates in treating CD: small molecular inhibitors, TLR4 antagonists, TLR2 inhibitors, IRAK-4 inhibitors, and monoclonal antibodies. Four established therapeutics in the management of CD were identified to interact with TLR signaling: glucocorticoids, tacrolimus, antihistamines, and UVB therapy.

Conclusions:
Glucocorticoids remain the first-line treatment for CD that target TLR signaling and may be used as stand-alone therapy or combined with experimental therapies that target TLR2, TLR4, and IRAK-4. Ongoing development of TLR-specific therapies may demonstrate promising findings for novel personalized treatments of CD. Dermatologists should consider future TLR-specific therapies in treating CD in patients who are unable to tolerate glucocorticosteroid-based or immunosuppressive agents.

Acknowledgements:
Thank you to Dr. Gaspari for his mentorship and expertise on TLRs.

Update of Isothiazolinones in Lens Cleaning Wipes and Sprays: A Comparison of Results for Isothiazolinone Spot Testing and Ultrahigh-Performance Liquid Chromatography-Tandem Mass Spectrometric Analysis

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Abstract

Objectives:
Methylisothiazolinone (MI) is a preservative and highly prevalent cause of allergic contact dermatitis (ACD). Isothiazolinone spot test kits exist for industrial water testing, however their utility for testing patient products in patch test clinics remains an area of minimal research. This study aimed to assess the concordance between isothiazolinone spot testing and mass spectrometry in aqueous products (lens cleaning wipes and sprays).

Methods:
7 lens cleaning wipes and 7 lens cleaning sprays were selected from the top sellers on Amazon, Walmart, and Target websites. Isothiazolinone spot testing was performed using the Lovibond® Isothiazolinone Colour Card Kit (56K00141) per protocol listed in the manufacturer's instructions. Ultrahigh-Performance Liquid Chromatography-Tandem Mass Spectrometric Analysis was performed on all samples at Lund University in Malmö, Sweden.

Results:
Isothiazolinones were detected in 5 of 7 (71.4%) lens cleaning sprays and 7 of 7 (100%) lens cleaning wipes via spot testing. 3 of 7 (42.9%) lens cleaning sprays and 3 of 7 (42.9%) lens cleaning wipes were positive for MI on mass spectrometry. Of lens cleaning products declared positive by isothiazolinone spot testing, 2 of 5 (40.0%) sprays and 4 of 7 (57.1%) wipes were negative for MI on mass spectrometry (false positive rate: 50.0%). Isothiazolinones were detected by spot testing in all samples found to contain MI on mass spectrometry (False negative rate: 0.00%).

Conclusions:
Concordance between results for Isothiazolinone Spot Testing and Ultrahigh-Performance Liquid Chromatography-Tandem Mass Spectrometry are low. For aqueous solutions, the false positive rate was 50.0%, however no false negatives were found.

Patch Testing and Allergic Contact Dermatitis in Patients with Lichen Planopilaris and/or Frontal Fibrosing Alopecia: A Systematic Review and Meta-Analysis

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Abstract

Objectives:
The pathogenesis of frontal fibrosing alopecia (FFA) has been linked to environmental triggers and exogenous allergens with the increasing incidence and association with cosmetic and personal care products. Allergic contact dermatitis (ACD) has been correlated to the lichenoid inflammatory reactions found in patients with FFA. The study sought to evaluate the association of FFA and lichen planopilaris (LPP) with ACD by analyzing the patch testing (PT) results in this patient population.

Methods:
A systematic review and meta-analysis of observational studies on PT in patients with LPP/FFA was conducted by searching PubMed, Embase, Cochrane, and Web of Science from inception to October 2023. The Mantel-Haenszel model was utilized to evaluate the likelihood of having at least one positive patch test reaction (PPTR) in patients with LPP/FFA. Subgroup analyses of PPTRs for individual allergens were also performed.

Results:
Seven studies were included for meta-analysis, comprised of a total of 320 LPP/FFA patients and 16,450 non-LPP/FFA controls. The pooled proportion of at least one PPTR was 0.75(95% CI, 0.61-0.87) in LPP/FFA patients and 0.53(0.37-0.69) in controls. Overall, LPP/FFA patients demonstrated significantly higher odds (OR[95% CI]) for a PPTR compared to controls (2.82[2.01-3.95]). Subgroup analyses showed elevated risks in LPP/FFA patients for allergic reactions to balsam of Peru (2.86[1.71-4.81]), benzoyl peroxide (6.09[2.13-17.40]), linalool hydroperoxide (4.18[2.39-7.33]), and nickel sulfate hexahydrate (1.80[1.06-3.05]).

Conclusions:
While the causal relationship between ACD and LPP/FFA cannot be directly drawn, our findings corroborate that ACD plays a potential role in the etiology of LPP/FFA. Routine PT and allergen avoidance should be considered for patients with LPP/FFA.

All for One, and One for All? The Fragrance/Botanical Monolith: Evaluating Copositivity Patterns in Fragrance/Botanical Patch Testing Through Hierarchical Clustering and Network Analysis

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Abstract

Objectives:
Fragrances/botanicals are ubiquitous allergens. Currently, patients positive to one fragrance/botanical are typically counseled to avoid all fragrances/botanicals, which may not be clinically necessary. Here, we examined copositivity patterns in fragrance/botanical patch testing.

Methods:
The Mayo Clinic patch test database was queried for pairwise copositivity rates for fragrances/botanicals between 1997 and 2022 from all series representing a total of 43 allergens. Data analyzed included 4,706 positive reactions of 252,485 total patches applied to 15,864 patients. After background correction for general positivity, copositivity rates were organized through unsupervised hierarchical clustering to determine copositivity subgroups, and then evaluated through network analysis.

Results:
After background correction, clustering revealed distinct copositivity subgroups: Fragrance Mix I-myroxylon pereirae-limonene-linalool; Compositae Mix-sesquiterpene lactone-parthenolide; Fragrance Mix II-Lyral; lichen acid mix-tree moss extract; menthol-mentha piperita; narcissus-dandelion; and Santalum Album-trans anethole-tea tree-lemongrass-clove-turpentine-rosa damascena-lavandula-geranium-cananga odoratum-neroli-bergamot. There were noted to be further isolated intergroup copositivity reactions as well.

Conclusions:
Background correction followed by hierarchical clustering demonstrated the fragrance/botanical group can be divided into multiple copositivity subgroups. Using network analysis, patients with a positive patch test to one fragrance/botanical allergen may be able to safely use specific other fragrances/botanicals.

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