2017 Annual Meeting Abstracts

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Prevalence of Preservatives Across All Product Types in CAMP (Contact Allergen Management Program)

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Preservatives are known causes of allergic contact dermatitis (ACD). The aim of this study was to determine the prevalence of preservatives in each product category in CAMP and compare prevalence with reported rates of allergic contact dermatitis. CAMP product information was queried based on the 53 approved preservatives for cosmetic products by the European Union and Association of Southeast Asian Nations plus 5 additional preservatives used in U.S. products. Phenoxyethanol (PE) and parabens were the most common preservatives with 23.9% of products containing PE and 20.75% of products containing parabens. Methylisothiazolinone (MI) was found in 12.9% of products, respectively, most commonly in hair care and household products. Preservatives like MI and MCI that are both common in products and have a high incidence of ACD are of greatest concern as contact allergy hazards. PE and parabens are common and have weak sensitizing power, making them preferred preservatives. Evaluating the prevalence of preservatives provides important information on allergen exposures. Using current positive reaction rates, the risk of sensitization to a given preservative can be more accurately estimated and may affect the use of certain preservatives by industry in the future.

Incidence of Nail Acrylate Contact Allergy in Tertiary Patch Test Service

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With increasing popularity of home and salon-applied nail cosmetics, the authors' anecdotal evidence is of increasing incidence of allergic contact sensitivity amongst consumers and those occupationally exposed to nail acrylates.

A retrospective review was performed of patients who underwent patch testing in 2014 and 2015. Patch testing was undertaken according to ICDRG guidelines. Patients were tested to the acrylic nail series if they had used or were using artificial nails.

2,586 patients underwent patch testing, with 250 tested to the artificial nail series. 37 patients (1.4%) had observed contact allergy to one or more components of this series, all clinically relevant, with 8 cases occupational. The most common allergen was hydroxyethyl methacrylate (HEMA) (87%), which was positive in all occupational cases. Mean age was 40 years (range 20-68). All patients with observed allergy were female, and atopy was reported in 62%.

With a total incidence of 1.4% our data corroborates evidence of rising incidence of contact allergy to acrylates[1]. The authors propose extending testing for relevant allergens, initially with the addition of HEMA to face and hand series.

1. Montgomery R. et al. Contact allergy resulting from the use of acrylate nails is increasing in both users and those who are occupationally exposed. Contact Dermatitis 2016; 74(2):120-2.

No acknowledgements.

Contact Dermatitits to Personal Hygiene Soaps/Cleansers: North American Contact Dermatitis Group (NACDG) data 2000-2014

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Background: There is limited information regarding the frequency and allergens associated with personal hygiene products.

Objectives: (1) Evaluate the prevalence (2) Identify allergens associated with irritant (ICD) and allergic (ACD) contact dermatitis from personal soap/cleanser sources.

Methods: Retrospective cross-sectional analysis of NACDG data, 2000-2014.

Results: Of the 32,945 tested patients, 1,069 (3.24%) had either ACD or ICD to soaps/cleansers. The majority were female (65.0%) and Caucasian (87.9%). 690 (64.6%) had allergy only, 350 (32.7%) had irritant only, while 29 (2.7%) had both. Individuals with ACD and/or ICD to soaps/cleansers were significantly more likely to have occupationally-related skin disease (40.3%) as compared to the overall population (10.8%). The most common sites of dermatitis included hands (39.7%), generalized (12.7%), and arms (12.1%). In ACD cases, > 50 allergens were identified including: Quaternium-15 (11.2%), Cocamidopropyl betaine (9.5%), Methylchloroisothiazolinone/Methylisothiazolinone (MCI/MI) (8.4%), Coconut diethanolamide (7.9%), Fragrance mix I (7.7%), Myroxylon pereirae (5.9%), 4-chloro- 3,5-xylenol (5.8%), Amidoamine (5.5%), Formaldehyde (4.4%), MI (4.2%), Decyl glucoside (2.9%), Oleamidopropyl dimethylamine (2.8), Iodopropynyl butyl carbamate (1.9), Glutaral (1.8), DMDM hydantoin (1.7), and Methyldibromo glutaronitrile/phenoxyethanol (1.7).

Conclusions: Many allergens, especially preservatives and surfactants, were associated with ACD to soaps/cleansers. Most cases involved the hands, and many were occupationally related.

Atopic Dermatitis Patients Do Not Have Greater Abundance of Staphylococcus Aureus in the Nares Compared to Non-Atopic Contact Dermatitis Patients

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Background: *S. aureus* is a contributor to the pathogenesis of atopic dermatitis and a target of treatment. The anatomical environment thought to most consistently support staphylococcal growth is the anterior nares.

Objective: To compare the relative abundance of *S. aureus* in the nares with affected and unaffected skin of adult patients with either a history of childhood onset dermatitis without relevant positive patch test (AD), a history of childhood onset dermatitis with relevant positive patch test (AD+CD), or adult onset dermatitis with relevant positive patch test (CD).

Methods: Following an IRB-approved protocol, we swabbed the nares, affected, and unaffected skin of thirteen patients in the above cohorts. DNA was extracted, PCR-amplified, and sequenced.

Results: Relative abundance of *S. aureus* was not statistically significantly different in the anterior nares of atopic and non-atopic dermatitis patients ($p = 0.331$). Within individual patients, there was no correlation between nares and affected or unaffected skin. All staphylococcal species demonstrated a trend of increased relative abundance in the affected skin of AD patients compared to the affected skin of CD patients.

Conclusion: Atopic dermatitis patients do not consistently have excessive amounts of *S. aureus* present in the nares, which argues against a systemic defect in vigilance against this organism.

An Unusual Contact Urticaria to Titanium Presenting as an Eosinophilic Edema Surrounding a Cervical Plate and Associated Pulmonary Edema

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Allergic reactions to titanium are rare, as is contact urticaria to metals. As titanium alloys are frequently used in patients who are nickel allergic, it is worthwhile to consider the possibility of reactions to other metals-such as titanium-which are frequently felt to be inert.
We present a 57-year-old female with a five-month history of redness and swelling involving the lower face, neck and upper chest associated with pain and shortness of breath status post placement of a cervical plate. The shortness of breath was due to a persistent eosinophilic pleural effusion which was unresponsive to antibiotics and recurred after multiple thoracenteses. Patch testing was negative. However, prick testing to the metals that were in the plate demonstrated pruritic wheals at multiple titanium salts six hours after the prick test was performed. The test was repeated and the same results occurred and were verified at our clinic. The plate was surgically removed, with symptomatic improvement occurring immediately and complete resolution of the edema, shortness of breath, and pulmonary effusion occurring within four months.
This appears to be an unusual case of allergy to titanium that was patch test negative and yet prick test positive, albeit in a very delayed fashion.

Benzalkonium Chloride: An Irritant and Potent Sensitizer

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Background: Benzalkonium chloride (BAK), a known irritant, and cross-reacting quaternary ammonium compounds are commonly used as preservatives in personal care products (PCPs).
Objective: To review positive reactions to BAK in 616 patients patch-tested for suspected allergic contact dermatitis.
Methods: A retrospective chart review was performed on 616 patients patch-tested from June 2015 to October 2016. All patients were tested to a Modified American Contact Dermatitis Society Core series of 70 allergens including BAK (0.1% aq). Initial readings were performed at 48 hours; final readings performed between 72 and 168 hours. Results were graded as 1+ (papules + erythema), 2+ (papules + edema), or 3+ (extreme, spreading).
Results: 141 (23%) men and 475 (77%) women were tested, mean age 49. 432 (70%) were atopic. 198/616 (32%) tested positive to BAK. Of the 87 patients who tested positive at 120 hours, 57 (66%) were 1+, 29 (33%) were 2+, and 1 (1%) was 3+. 64/198 (32%) BAK positive patients had 2+ - 3+ reactions across all final reading times. On average, BAK positive patients were using at least 1 product containing BAK or cross reactors.
Conclusion: Widespread exposure to irritants in dermatitis patients can cause sensitization, thus explaining the high prevalence of BAK allergy in our cohort. BAK is not a suitable preservative for eczema products.

Contact Dermatitis from Alkyl Glucosides: The McGill University Health Centre Experience

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Objectives: Synthesized from natural sources, the mild surfactants alkyl glucosides are being rediscovered by the cosmetic industry. Over the past 15 years, cases of allergic contact dermatitis have been published, mostly to lauryl and decyl glucosides. The sunscreen Tinosorb® M contains decyl glucoside as a "hidden" allergen, the likely culprit in most cases of allergic contact dermatitis to this sunscreen ingredient. This presentation will briefly review alkyl glucosides and focus on cases from the MUHC, as well as a case from France.
Methods: Between January 2009 and June 2016, 3095 patients were patch tested with the North American Contact Dermatitis Group series, which includes decyl glucoside. Among these 3095 patients, 1628 were also tested to lauryl glucoside in a cosmetics series.
Results: Twenty (0.65%) patients reacted to decyl glucoside. Fifteen (0.92%) of 1628 patients were positive to lauryl glucoside, with 6 also allergic to decyl glucoside. Nine patients reacted to lauryl glucoside alone. The sensitization rate increased to 2.2% in the fist 6 months of 2016.
Conclusion: The sensitizing potential of alkyl glucosides is higher than expected. Cross-reactions are not automatic and multiple glucosides should be tested to increase the rate of detection.

The Association of Patch Test Results with Ethnicity/Race and Age in the PCDR

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Background: With changing demographics of the population of the United States, there is a growing need to understand the role of race/ethnicity and age in dermatologic presentations and manifestations.
Objective: To evaluate trends in patch testing and report the association of ethnicity/race and age with positive patch test (PPT) results.
Methods: The Pediatric Contact Dermatitis Registry (PCDR) cases reported into the database in 2015 were compared for frequency of PPT across reported allergens to ethnic/race and age designation.
Results: 1142 cases were reported into the database. The mean age of all enrolled subjects was 11.1 years, comprised of 62.4% females and 33.9% males. The study population included 175 subjects (15.3%) under 6 years of age, 427 subjects (37.4%) between 6 to 12 years of age, and 493 subjects (43.2%) between 13 to 18 years of age. Participants were non-Hispanic white (57%), Hispanic (15.7%), African American (12%), and Asian (7.1%). The diagnosis of atopic dermatitis in patch tested patients was most prevalent in African Americans with an odds ratio of 4.09. This study highlights a comparative analysis of PPT in the Caucasian ethnic group versus non-Caucasians.
Conclusion: The PCDR has become one of the largest provider-collaborative registries, offering the opportunity to evaluate differences in PPT reactions against ethnic /race and age parameters.

Patient Reported Improvement After Patch Testing at a Tertiary Referral Center

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Objectives: To assess patient reported improvement after patch testing and allergen avoidance counseling, at the 2-3 month follow up visit, in patients with likely relevant positive patch test results at the University of California San Francisco.

Design: Retrospective cross-sectional analyses of patients patch tested between 2013 and 2016 who returned for a follow up visit approximately 2-3 months after patch testing. We examined positive patch test results considered of definite, probable, or possible relevance to the patient's eczematous eruptions.

Main Outcome Measures: Patients reported improvement after patch testing as a percentage 0-100%. Patients were categorized into four groups: 1) those that reported no improvement or worsened, 2) those that reported greater than 0% and less than or equal to 60% improvement 3) those that reported greater than 60% but less than 100% improvement, and 4) those that reported 100% improvement.

Results: The majority (81%) of patients seen at follow up reported improvement after patch testing. Women reported more improvement than men with statistical significance. Notably, there does not appear to be statistically significant relationship in patient reported improvement and age, atopy, strength of a patient's positive reactions, number of positive reactions, follow-up time, or positive reaction to potential systemic contact allergens (i.e. Balsam of Peru, nickel, chrome, and cobalt.)

(Meth)Acrylate Allergy in Nail Technicians

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Recently, many cases of acrylate-associated allergic contact dermatitis have appeared in nail salon workers. Common acrylate-containing products in nail salons include traditional nail polish, shellac, UV-cured gel nails, and press-on acrylic nails. We report six cases of allergic contact dermatitis to acrylates in nail technicians seen over the past year, representing a new trend in our clinic.
All patients were female, age 38 to 58, and seen for patch testing between 2015 and 2016. Common symptoms included erythematous eruptions of the dorsum of the hand, palm, and forearm, and fissures on the fingertips. Less common sites of eruptions included the periorbital region, cheeks, posterior ears, neck, sacral area, lateral thighs, and dorsum of the foot.
All patients were tested with the Chemotechnique (Meth)Acrylate nail series, and either the North American Standard series or the North American Contact Dermatitis Group screening series. All patients reacted to hydroxyethyl methacrylate (HEMA) and five patients reacted to ethyl acrylate. Each patient also reacted to (meth)acrylates that are not found on either standard series, including ethylene glycol dimethacrylate (EGDMA), 2-hydroxypropyl methacrylate (HPMA), and 2-hydroxyethyl acrylate (HEA).
These cases are reflective of a growing trend of nail technicians with ACD associated with occupational (meth)acrylate exposure. Efforts to improve prevention are needed.

Occupationally Induced Allergic Contact Dermatitis to Quaternary Ammonium Compounds

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Objective: To present a case series of occupationally induced contact allergy due to quaternary ammonium compounds, in both health-care and non-health-care related settings. All patients were using these compounds for job-related duties, and changes in work procedures helped symptoms in 2 health care workers but complete removal from the workplace was necessary in 1 non-health care worker with respiratory symptoms.
Results: Two nurses and one coffee shop manager were patch tested using a modified American Contact Dermatitis Society core series for suspected allergic contact dermatitis. The nurses had involvement of the face and eyelids while the coffee shop manager had hand dermatitis and respiratory symptoms including wheezing and chest tightness while at work. The average duration of dermatitis was 15 months. A history of atopy was elicited in 2/3 patients. Relevant allergens in each patient included 2+ reactions to benzalkonium chloride (BAK). Quaternary ammonium compounds, structurally similar to BAK, were confirmed in disinfectant wipes used by the nurses and a cleaning solution used by the coffee shop manager. With allergen avoidance, each patient clinically improved.
Conclusions: Quaternary ammonium compounds, such as BAK, are widely used in the workplace as disinfectants and cleansers. These cases highlight the significance of recognizing relevant sensitizing quaternary ammonium compounds in an occupational setting as well as their implications in creating a safe workplace.

Training, Knowledge, and Prevention Practices Among Workers with Contact Dermatitis: Descriptive Findings

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Background: Contact dermatitis is a common work-related disease. Training and education may be effective for the prevention of contact dermatitis. Little information is available regarding actual workplace training and its effectiveness.
Objectives: To describe training experiences, workplace characteristics, prevention practices, and skincare-related knowledge among workers with suspected contact dermatitis.
Methods: Following ethics approval, patch test patients being assessed for suspected contact dermatitis, who were working or off work because of skin disease, were invited to complete a questionnaire. Demographic and diagnostic information were abstracted by chart review.
Results: 122 workers (mean age 43 years, 58% female) participated. While many received general occupational health and safety (80%) and hazardous materials (76%) training, only 39% received skin-specific training; the majority worked in large, unionized workplaces in the healthcare and manufacturing & automotive sectors. The average number of correct responses to skin-related questions was 80%. Prevention practices included use of gloves (69%), cotton liners (20%), skin creams (72%), and material safety data sheets (49%).
Conclusions: The findings indicate gaps in workplace training and prevention practices among workers with contact dermatitis.
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Structural Modification of p-Phenylenediamine Affects the Immune Response in Allergic Patients

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The strong sensitizing potency of p-phenylenediamine (PPD) is well established and it is considered the key sensitizer in hair dye contact allergy. Modification of its molecular structure has been shown to alter its sensitizing potency. Our current clinical investigations analyzed how the methoxymethyl-modification of PPD affects the immune response in PPD allergic individuals in three patient populations in the USA and in Europe. When 73 PPD-allergic patients were exposed to a hair dye product containing 2% ME-PPD instead of 2% PPD for 30 or 45 min on their forearm (simulating hair dye use conditions) no elicitation response was observed in 45 (62%). Among the 28 PPD allergic patients that reacted to both ME-PPD and PPD under these conditions, 24 (85%) showed a reduced reaction strength in response to ME-PPD. Furthermore, in a fourth study, 29/43 (67%)PPD allergic individuals tolerated continued hair dyeing with ME-PPD containing hair color products with an average of 9 treatments per year when they had no reaction to the 45 min forearm exposure. In summary, the human immune response to PPD is attenuated by the methoxymethyl modification. This translates into an increased tolerance in PPD allergic patients at hair dye use conditions that decreases at higher ME-PPD exposures. Compared to PPD, the chance of provoking an elicitation reaction to ME-PPD is reduced to below 40% under hair dye use conditions and (cross)-elicitation reactions likely occur with reduced strength. Based on the described skin sensitization profile, ME-PPD is considered a safer alternative for hair dye products.

Limonene and Linalool Hydroperoxides in Spain, Contact Sensitization and Source of Exposure

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Background: Based in an occupational case of contact allergy to limonene hydroperoxide in a laboratory technician this study was initiated. Oxidation products formed after air exposure, limonene and linalool hydroperoxide have been recognized as important contact haptens.

Objectives: Investigate the prevalence of contact allergy to hydroperoxides of limonene (Lim-OOHs) and linalool (Lin-OOHs) in Spain. Define the best patch test material recommended for testing and the source of exposure.

Methods: Three different concentrations of Lim-OOHs (0.1, 0.2 and 0.3% pet.) and Lin-OOHs (0.25, 0.5 and 1.0% pet.) were simultaneously tested in 3639 consecutive patients at 22 Departments of Dermatology in Spain.

Results: Lim-OOHs 0.3% detected positive patch test reactions in 5.1% of the tested patients; while Lin-OOHs 1.0% detected positive reactions in 4.9% of the patients. Present exposure to one or several products was registered in 46.0% and 46.9% patients with positive reactions to Lim-OOHs and Lin-OOHs respectively. The most common products containing limonene and/or linalool were cosmetics and fine fragrances, soaps, hair products, moisturizers, and detergents. 18.2% showed occupational contact allergy. 31.0% and 33.0% positive patients to Lim-OOHs and Lin-OOHs showed concomitant reactions to other fragrance markers and/or colophonium.

Conclusions: Patch test preparations of Lim-OOHs 0.3% pet and Lin-OOHs 1.0% pet are useful tools for screening of contact sensitization. Lim-OOHs and Lin-OOHs can be considered as common causes of contact allergy being its exposure mostly relevant in occupational and no occupational setting.

Utility of Store and Forward Teledermatology for Patch Test R

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Objectives: To compare conventional, in-person (IP) grading of skin patch test reactions with store and forward teledermatology (TD).
Methods: Patients undergoing patch testing to the North American Contact Dermatitis Group (NACDG) screening series were invited to participate in this repeated measures study. Photographs of the NACDG screening series patch sites were obtained at two time points (48-hour and final readings). TD assessments were completed by the same staff dermatologist who performed the IP readings; 48-hour and final TD photographs were viewed at weeks 4 and 8 after the IP encounter, respectively, to prevent recall bias. The main outcome was percent agreement. Three final outcome groups of "success", "indeterminate", and "failure" were defined based on clinical significance.
Results: 101 participants completed the study. There were 7,070 comparison points between IP and TD final readings. Excluding negative/negative agreement, there was "success" of TD in 54% of final readings. "Indeterminate" agreement with possible clinical significance was present in 40% of final readings. There was "failure" (definite clinical significance) in 6%.
Conclusions: TD may be a viable option for grading skin patch test reactions. However, a clinically significant "failure" rate of 6% and practical barriers to TD implementation may preclude its widespread use.

Validity of Self-Reported History of Rash to Metal or Jewelry

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Objective: Self-reported history of dermatitis with jewelry and/or metal exposure is not reliably established as predictive for metal allergy.

Methods: The study population consists of 2,132 consecutive patients seen in the MGH Contact Dermatitis Clinic. Patients were asked either, "Do you get rashes when jewelry touches your skin?" (N=1,816) or "Do you get rashes when metal touches your skin?" (N=316). All patients underwent patch testing.

Results: Patch testing revealed 20% of subjects with nickel-, 13.8% gold-, 7.4% cobalt-, and 5.8% with chromium-positive reactions. "Do you get rashes when your skin is exposed to jewelry?" (Q1) was 40% sensitive (95%CI 0.35-0.45), and 87% specific (95%CI 0.85-0.89). The positive predictive value was 51%, and the negative predictive value was 82%. "Do you have rashes when your skin is exposed to metal?" (Q2) was 77% sensitive (95%CI 0.68-0.84) and 79% specific (95%CI 0.72-0.84). Q2's PPV was 71%, and NPV was 84%. While Q2 was 37% more sensitive than Q1 ($p<0.0001$), Q1 proved to be 8% more specific than Q2 ($p=0.0002$).

Conclusions: Patient reported metal allergy, while not perfect, is a reasonable method for screening for metal allergy, especially when asked with other clarifying history. The question "do you get rashes when metal touches your skin?" is the more useful screening tool. Historical screening may be valuable as the use of metal-containing medical devices expands.

Contact Allergens in Bar Soaps vs. Liquid Soaps

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Introduction: Avoidance of specific allergens aids in the management of allergic contact dermatitis (ACD). While previous studies have investigated the presence of numerous contact allergens in cleansing products, limited research on contact allergens in specific formulations of cleansing products currently exists.

Objectives: To identify the difference between the number and types of contact allergens found in bar soaps versus liquid body washes.

Methods: We examined the top 50 bar soaps and body washes listed on Amazon.com, sorting by "Relevance" and filtering by "Avg. Customer Review 4 stars and up." Allergens were selected from the American Contact Dermatitis Society (ACDS) Recommended Allergen Series. Chi-squared and Fischer exact analyses compared allergens in bar soaps versus body washes.

Results: Liquid body washes had far more preservative and surfactant allergens compared to bar soaps ($p<0.001$). Methylisothiazolinone, quaternium-15, sodium benzoate, DMDM hydantoin, phenoxyethanol, methylchloroisothiazolinone/methylisothiazolinone (MCI/MI), and iodopropynyl butylcarbamate were particularly prevalent preservatives in body washes; cocamidopropyl betaine and decyl glucoside were ubiquitous surfactants in body washes and rarely seen in bar soaps. No difference in the rate of fragrance ingredients existed between bar soaps and body washes.

Conclusions: The use of bar soaps instead of body washes may alleviate symptoms and improve quality of life in some ACD patients.

Delayed Patch Test Reading after 5 Days: An Update of the Mayo Clinic Experience from the Mayo Clinic Contact Dermatitis Group

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Background: Patch-test readings after day-5 have previously been utilized to identify delayed reactions to metals and topical antibiotics.

Objectives: To identify allergens for which late readings beyond day-5 would be most valuable and to compare our results with our previous study on delayed patch test readings.
Methods: This was a retrospective study of 298 patients who underwent metal and steroid series patch testing from January 2007 to December 2013 at Mayo Clinic, Rochester, Minnesota. Patch test readings were conducted on days 3 and 5, and at least once again sometime between days 7 through 14. All reactions were examined at each reading.
Conclusions: These results were concordant with our previous findings that additional readings after day 7 are particularly useful for identifying reactions to metals, specific preservatives, and the topical antibiotic neomycin. New late reactions to bacitracin, PPD, and topical corticosteroids were not seen in this cohort.

Despite Continued Fragrance-Free Labelling, A Historically Fragrance-Free Canadian Shampoo Now Contains Fragrances: Fragrance Free no Longer Means Frangrance Free

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Background: For several decades Canadian dermatologists have recommended Cliniderm Gentle Shampoo for patients with contact allergy to fragrances, and at least historically use of this product had allowed patients to clear their dermatitis. In May 2016 the manufacturer launched a new formulation of Cliniderm Gentle Shampoo, with the main difference being the addition of several different citrus peel oils. The labeling on the new formulation states that the product is fragrance-free.

Objective: To determine if the new formulation of Cliniderm Gentle Shampoo contains any common fragrance haptens.

Methods: The old (i.e. historic) and new formulations of Cliniderm Gentle Shampoo were analyzed separately using Static Headspace Gas Chromatography/Mass Spectrometry (SHS-GCMS). Resulting chromatograms were analyzed and compared.

Results: The old formulation of Cliniderm Gentle Shampoo contained no detectable fragrance molecules. In contrast, the new formulation showed a large peak corresponding to limonene, as identified by scanning the fragmentation pattern against a library of known compounds.

Conclusion: Contrary to being labelled as fragrance-free, the new formulation of Cliniderm Gentle Shampoo does contain at least one common fragrance hapten. Although the manufacturer has not added any pure synthetic fragrance molecules, the citrus peel oils nevertheless contain fragrances which will exacerbate allergic contact dermatitis in a significant proportion of fragrance allergic patients.

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Simultaneous Contact Dermatitis to Asteraceae and Verbascum Thapsus

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Verbascum thapsus (mullein) is a plant species of the Scrophulariaceae family. Its yellow flowers are borne on a tall (30-200 cm) club-shaped spike. The large, pale green, lanceolate leaves are covered with fine woolly hairs claimed to be irritant. We report a case of contact dermatitis to this plant in a 12-year-old girl who presented with scattered pruritic papules and vesicles that recurred for 5 years every summer. The patient and her father had identified six plants as the potential culprits. She was patch tested with the North American Contact Dermatitis Group Standard series, the plant series and pieces of fresh plant samples brought for testing. Patch tests were positive at D2 and D4 to *Tanacetum vulgare*, while the Compositae mix became positive at D4. Among the plants brought by the patient, daisy (*Chrysanthemum leucanthemum*) and mullein (*Verbascum thapsus*) were positive at D2 and D4. Five control subjects developed urticarial-looking irritant reactions within 4-6 hours of closed patch testing with mullein. However, the vesicular morphology of our patient's patch test and its crescendo pattern were suggestive of allergy but we cannot exclude that her dermatitis was due to the irritant properties of the plant. Ours is the first report of non-occupational contact dermatitis to *Verbascum thapsus* with simultaneous contact allergy to members of the Asteraceae family.

Rosewood Systemic Contact Dermatitis: New Insights on Exotic Wood Allergy

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Exotic woods are commonly used for their beauty in the construction of furniture. Few reports discuss occupational contact dermatitis with rosewood. A 27 year-old carpenter developed erythema multiform-like lesions on his forearms and wrists with erythematous papules around his umbilicus, torso, arms and genitals after starting to work on rosewood kitchen cabinets. He also presented mucosal lesions on the hard palate accompanied by respiratory symptoms such as cough, rhinitis, and throat irritation. Patch test with rosewood sawdust 10% in petrolatum was positive and created flare-up lesions on the trunk and arms. Cutaneous biopsy of the forearm demonstrated perivascular and periadnexal lympho-eosinophilic infiltrate with a very high concentration of eosinophils in the reticular dermis with very few changes of the epidermis. We suspect this case to be a subtype of systemic contact dermatitis to rosewood demonstrated by the patient's cutaneous lesions on sites that did not have physical contact with sawdust such as the umbilicus, back and torso. Furthermore, the cutaneous biopsy demonstrated eosinophilia infiltrate in the deep dermis and not superficially in the epidermis, which could be related to systemic allergy. These rare cases must be reported in order to have a better understanding of this subtype of allergic systemic dermatitis.

Periorbital Allergic Contact Dermatitis Due to Ketotifen

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Case: A 54-year-old woman with seasonal allergies presented with a several year history of intermittently pruritic eyes and eyelids associated with a periorbital rash. She had received multiple courses of systemic prednisone that would temporarily relieve her symptoms. Oral cetirizine and multiple brands of eye drops were of minimal benefit. She wore eyeglasses but no contact lenses. Patch testing was performed with the North American Contact Dermatitis Group (NACDG) screening series, as well as several supplemental series including preservatives, vehicles, cosmetics, nail acrylates, and perfumes/flavors as well as personal items including all eye drops.
Results: Clinically relevant positive reactions were noted to two over-the-counter eye drops, both of which contained ketotifen, benzalkonium chloride, and glycerin. Pertinent negatives included purified benzalkonium chloride (tested twice) and purified glycerin. She tested negative to a third brand of drops, Up & Up Allergy Relief eye drops, which contained benzalkonium chloride, but not ketotifen. Purified ketotifen was not available for testing.

Conclusions: The patient's positive patch tests to both ketotifen-containing eye drops and repeatedly negative testing to other potential allergens in these products strongly supports ketotifen as the causative allergen. Previously unreported in North America, ketotifen is a rare but potentially important allergen, especially in individuals with periorbital dermatitis.

Allergenic Ingredients in Hand Wet Wipes

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Background: Hand dermatitis is a common location for allergic contact dermatitis (ACD). Wet wipes may be an important allergen source.
Objective: To evaluate potential allergenic ingredients in hand wipes.
Methods: Ingredient lists from name brand and generic hand wipes from 4 large retailers were recorded to create a database of hand wipe ingredients.
Results: In the 34 hand wipes evaluated, a total of 87 ingredients were identified, with an average of 9 ingredients per hand wipe. The most common potentially allergenic ingredients were *Aloe barbadensis* (85.3%), tocopherol derivatives (61.8%), citric acid (55.9%), fragrance (55.9%), alcohol (52.9%), benzalkonium chloride (52.9%), glycerin (47.1%), disodium EDTA (41.2%), phenoxyethanol (35.3%), sorbic acid derivatives (35.3%), disodium cocoamphodiacetate (29.4%), parabens (23.5%), propylene glycol (20.6%), methylchloroisothiazolinone (17.6%), methylisothiazolinone (17.6%), chamomile extracts (14.7%), glucosides (11.8%), and lavender extracts (11.8%).
Conclusions: Many potential allergens are present in hand wipes, especially fragrance and preservatives.

Allergenic Ingredients in Personal Hygiene Wet Wipes

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Background: Personal hygiene wipes are a significant allergen source for anogenital allergic contact dermatitis (ACD).
Objective: To determine the frequency of potentially allergenic ingredients in personal hygiene wipes.
Methods: Ingredient lists from name brand and generic personal hygiene wipes from four large retailers were recorded.
Results: In the 54 personal hygiene wipes evaluated, a total of 132 ingredients were identified, with an average of 12 ingredients per personal hygiene wipe. The most common potentially allergenic ingredients were *Aloe barbadensis* (77.8%), citric acid (77.8%), fragrance (72.2%), sorbic acid derivatives (63.0%), tocopherol derivatives (63.0%), glycerin (59.3%), phenoxyethanol (55.6%), disodium cocoamphodiacetate (53.7%), disodium EDTA (42.6%), propylene glycol (42.6%), iodopropynyl butylcarbamate (40.7%), chamomile extracts (38.9%), sodium benzoate (35.2%), bronopol (22.2%), sodium citrate (22.2%), lanolin derivatives (20.4%), parabens (20.4%), polyethylene glycol derivatives (18.5%), disodium phosphate (16.7%), DMDM hydantoin (14.8%), and cocamidopropyl PG-dimonium chloride phosphate (11.1%).
Conclusions: Many potential allergens are present in personal hygiene wipes, especially fragrance and preservatives.

Allergenic Ingredients in Facial Wet Wipes

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Background: Facial dermatitis is one of the most common locations of allergic contact dermatitis (ACD). Facial cleansing wipes may be an under-recognized source of allergens.
Objective: To determine the frequency of potentially allergenic ingredients in facial wet wipes.
Methods: Ingredient lists from name brand and generic facial wipes from four large retailers were recorded.
Results: In the 178 facial wipes examined, a total of 485 ingredients were identified, with an average of 16.7 ingredients per facial wipe. Excluding botanicals, the most common potentially allergenic ingredients were glycerin (64.0%), fragrance (63.5%), phenoxyethanol (53.9%), citric acid (51.1%), disodium EDTA (44.4%), sorbic acid derivatives (38.8%), tocopherol derivatives (38.8%), polyethylene glycol derivatives (32.6%), glyceryl stearate (31.5%), sodium citrate (29.8%), glucosides (27.5%), cetearyl alcohol (25.8%), and propylene glycol (25.3%). Of note, methylisothiazolinone (2.2%) and methylchloroisothiazolinone (1.1%) were uncommon. The top 12 potential allergens of botanical origin were *Aloe barbadensis* (41.0%), chamomile extracts (27.0%), tea extracts (21.3%), *Cucumis sativus* (20.2%), and *Hamamelis virginiana* (10.7%).
Conclusions: Many potential allergens are present in facial wipes including fragrances, preservatives, glucosides and propylene glycol.

Wet Wipe Allergens: Retrospective Cross-Sectional Analysis of North American Contact Dermatitis Group (NACDG) Data from 2011-2014

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Background: Wet wipes are a relatively new source of allergic contact dermatitis (ACD).
Objective: To determine the prevalence of wet wipes as a source of ACD and identify associated allergens.
Methods: Retrospective cross-sectional analysis of data collected from 2011-2014 by the NACDG.

Results: Of the 9,037 patients patch tested during the study period, 79 (0.9%) had a positive patch test reaction to an allergen associated with a wet wipe source. Most were adults (96.2%). There were no statistically significant differences in age, gender, atopic markers, or race between individuals with a wet wipe source of allergens and those without. Anogenital dermatitis was 15 times more likely (RR 15.3, CI 9.79-23.93, $P < 0.0001$) in those with wet wipe allergy. The most common category of associated allergens was preservatives: methylisothiazolinone (59.0%), methylchloroisothiazolinone/methylisothiazolinone (35.6%), bronopol (27.4%) and iodopropynyl butylcarbamate (12.3%). Fragrance materials were the second most common category (12.3%). Over 92% of patients with wipe-associated ACD were detected by the NACDG screening series.

Conclusions: Wet wipes are an important source of ACD. Preservatives, especially isothiazolinones, and fragrance are the most commonly associated allergens.

Treatment of Severe Atopic Dermatitis with Azathioprine. Our Experience.

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Objective: To evaluate efficacy and safety in our clinical practice of azathioprine (AZA) as long term treatment of severe atopic dermatitis.

Methods: We identified adult patients with severe atopic dermatitis who had been treated with AZA in the last ten years in a general hospital in the north of Spain. Clinical data, concomitant diagnosis, previous treatments, dosages and response to AZA (SCORAD, PGA), adverse effects and reasons for suspension were analyzed.

Results: Thirty-one patients were included in this study: 52% male, mean age 38 years, mean duration of symptoms 16.7 years, and mean initial SCORAD 52. Previous treatments: 87% oral corticosteroids, 55% cyclosporine, 29% other systemic, 16% phototherapy. AZA induced a complete response (SCORAD improvement = 75%) in 22.6% of patients; moderate response (=50%) in 48.4%; poor or no response in 29%. Time for response was 4 months, and duration of treatment 26.7 months, on average. 35% of patients reported adverse effects (most common: gastric intolerance, infections), and 13% discontinued AZA.

Discussion: In our series, AZA showed better efficacy and similar proportion of adverse effects than published data. Advantages of AZA include the possibility of long term treatment, its relative safety and simple monitoring protocol. Disadvantages of AZA included potential toxicity – sometimes unpredictable and severe-, need for close follow-up and its occasional lack of efficacy. Higher IgE associated with poorer response to AZA, unlike other variables like sex, age, disease duration or dose related to TPMT levels.

Conclusions: AZA is useful and safe in severe atopic dermatitis, with a response rate of 70%.

Key words: Severe atopic dermatitis, azathioprine, systemic treatment.

Impact of the Use Tests in the Contact Dermatitis Clinic

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Introduction: Use tests and especially the Repeated Open Application Test or ROAT are used in Contact Dermatitis Clinics to confirm a suspected sensitization or to define the relevance of a positive patch test reaction.

Methods: The use of ROATs in our Contact Dermatitis Unit between 2006 and 2016 is described. The results are exposed and analyzed.
Results: Of 1673 studied patients, 161 (9.6%) performed a ROAT. The test was positive in 47% of cases, with a sensitivity of 90.1% and a specificity of 96.3%. There was a high correlation between positive patch tests and positive ROATs. In 6 patients (7.9%) with negative patch tests, positive ROATs were topical drugs, cosmetic products and natural remedies.
Discussion: The ROAT has to be done correctly. Experts insist on using a uniform methodology, with an established dosage, application on the forearm (not in fossae), twice daily for at least 14 days, and interpretation following the diagram proposed by Johansen*. All in, ROAT is a simple and easy to do test, with a positive predictive value of 96.1% and a negative predictive value of 90.6%.
Conclusions: Open tests are a very useful diagnostic tool because they help confirm sensitization and exposure to a suspected allergen and they have a high positive predictive value. We strongly recommend to perform them whenever possible.
*Johansen JD, Bruze M, Anderson KE et al. The ROAT: suggestions for a scale of evaluation. Contact dermatitis 1998;39:95
Key words: contact dermatitis, diagnosis, Repeated open application test, epidemiology.

Preliminary Results of an Online Self-Reporting Nickel-Allergic Contact Dermatitis Survey

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Background: Nickel is the most common sensitizing allergen identified by patch testing worldwide. The rate of nickel sensitization continues to increase in America due to unregulated exposure of free nickel. However, the exact prevalence of nickel allergy within the general United States population is unknown.
Objective: Survey prevalence and demographics of a nickel allergy in the general population.

Methods: A questionnaire was created to identify respondents with nickel-allergic contact dermatitis. Canvassing methods included in-person surveying at public venues, online postings, and health care provider engagement and survey distribution.

Results: Within eight months of launching the survey, 2288 respondents were indexed. Out of the 1360 individuals sampled at face to face outreach events in San Bernardino, California, 15.8% (n=215) self-reported a nickel allergy. Lower rates were noted in the Adventist-predominant areas of Loma Linda (10%) where piercing is not a prevalent practice.

Conclusions: Outreach events created the unique opportunity to perform a random sample of a general population. These results mimic that of European countries prior to nickel legislation. Piercing remains a significant risk factor.
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Allergic Contact Dermatitis to Topical Diltiazem

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Diltiazem, a calcium channel blocker (CCB) and antihypertensive, is used topically to treat anal fissures and reports of allergic contact dermatitis from it are rare. Recently, we had a 67-year-old woman present to our contact dermatitis clinic with a 2- month history of a pruritic and previously vesicular rash of the thighs, buttocks, and perineum with associated burning rectal pain. Previous proctoscopic examination had shown inflammation of the rectum and anal verge. The rash had developed after she began using a topical diltiazem gel, obtained in India, to treat an anal fissure. She suspected the diltiazem and discontinued it, along with her oral antihypertensive CCB, cilnidipine. This lead to improvement but not resolution of the rash and burning rectal sensation. Patch testing revealed a severe reaction (+++) to her diltiazem gel and diallyl disulfide, the allergen of garlic/onions. There were no reactions to the cilnidipine tablets tested at several concentrations in both petrolatum and water. Although no cross between her two CCBs was observed, cross-reactions have been reported, and she was encouraged to not only discontinue the diltiazem but also obtain a different antihypertensive pill. The pruritic rash improved significantly with these measures, but she continues to have exacerbations of rectal pain following consumption of garlic and onions.

Contact Dermatitis to Methylisothiazolinone in Residential Wall Paint

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Methylisothiazolinone (MI) is a preservative used in personal products and industrial materials. In Europe, MI in residential wall paint has been reported to cause occupational airborne contact dermatitis in painters. Recently, a 33 year-old woman presented to our clinic for suspected photoallergic contact dermatitis with a recent episode of severe, vesicular dermatitis of exposed skin which correlated with a relocation to a new home. Direct immunofluorescence was negative and biopsy showed spongiotic and lichenoid dermatitis with eosinophils. Work-up for lupus was negative. Patch testing showed a very strong (+++) reaction to MI and a mild (+) reaction to methylisothiazolinone/methylchloroisothiazolinone (MCI). These allergens were found in several of her personal care products. However, the patient was very suspicious of the wall paints she had applied in her new home. Semi-open patch tests to 3 of the 4 Behr® interior paints were positive. Nine controls were negative. High-performance liquid chromatography demonstrated MI and benzisothiazolinone in all 4 paints at concentrations ranging from 50-100 PPM and 290-340 PPM respectively. MCI and butylbenziosthiazolinone were not detected.

Complementary and Alternative Medicine (CAM) & Contact Dermatitis

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Background: Use of complementary and alternative medicine (CAM) in dermatology is increasing. Thus, it is imperative that physicians and patients be cognizant of their adverse effects.

Objective: To systematically present the literature on CAM and contact dermatitis in order delineate the appropriate use of such therapies.

Methods: A PubMed search was performed using keywords alternative medicine and contact dermatitis.

Results: Of the 77 studies included, 23(30%) found CAM therapies improved symptoms of contact dermatitis while 50(65%) reported CAM therapies caused contact dermatitis. Of the studies that demonstrated a benefit of CAM therapies, none were level 1 evidence, 1(4%) was level 2, 1(4%) was level 3, none were level 4, and 21(91%) were level 5. Of the studies reporting a causal effect of CAM on contact dermatitis, none were classified as level 1 evidence, 3(6%) were a level 2, 1(2%) was level 3, 7(14%) were level 4, and 39(78%) were level 5.

Conclusion: Despite the belief that alternative therapies are benign in the context of dermatology, the literature strongly suggests they may in fact cause contact dermatitis. This should be considered in treatment of patients with alternative therapies and should also be considered when patients experience inflammatory reactions as a result of CAM. Further high quality studies are indicated, however, prior to the creation of definitive treatment recommendations for CAM therapies in dermatology.

Ethyl Cyanoacrylate in Dexcom Glucose Sensor Adhesive

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Introduction: The Dexcom G5 Mobile/G4 Platinum glucose sensor is used in diabetic patients for glucose monitoring; it is adhered to the skin for up to one week. We present two cases of allergic contact dermatitis from ethyl cyanoacrylate in the adhesive of this glucose sensor.

Cases: Two Type 1 diabetic patients presented with a history of a pruritic, erythematous rash underneath the adhesive portion of the sensor which lasted for several days to weeks after removal. Both patients also wore an insulin pump without issue. Both patients underwent patch testing: Patient 1 developed 1+ reactions to multiple acrylates (2-hydroxethyl methacrylate, ethyl cyanoacrylate, ethylene glycol dimethacrylate, ethylene methacrylate, ethyl methacrylate, diethylene glycol diacrylate), as well as colophony, pine tar, and abietic acid with a 2+ reaction to the Dexcom G5 glucose sensor adhesive. Patient 2 had 1+ reactions to fragrance mix II, propolis, and a doubtful reaction to ethyl cyanoacrylate with notable negative to octyl cyanoacrylate. Personal communication with Dexcom confirmed that ethyl cyanoacrylate was the medical grade adhesive present in the sensors. Because of numerous reports of intolerance to this sensor, the manufacturer has reformulated the sensor so that those produced after 8/15/16 no longer contain ethyl cyanoacrylate.

An Atypical Clinical and Histologic Presentation of Allergic Contact Dermatitis

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Objective: To describe an atypical presentation of contact dermatitis

Case: A healthy 40-year-old woman presented with an intermittent eruption of the chest, abdomen, arms, groin and inner thighs. Predominant symptoms were burning and pain, with mild pruritus. She described a wrinkling appearance of the skin, followed by a bright erythema, then desquamation. Desquamative dermatitis was pronounced on the lower abdomen and medial thighs.

Initial biopsies taken from areas of scale revealed 1. vacuolar interface dermatitis with spongiosis, and 2. mild psoriasiform epidermal hyperplasia and compact hyperkeratosis. Patch testing was considered but deferred due to atypical presentation. Screening lab work was normal. She avoided oral medications with no improvement.

Given her severe symptoms, we repeated biopsies at new areas of erythema *without* scale. Both biopsies showed spongiosis. Given these findings, patch testing was performed. She tested positive to hydroperoxides of linalool, fragrance mix II, and alpha-tocopherol. Avoidance of these chemicals led to resolution of her dermatitis, and she has been disease-free for nearly two years.

Conclusion: The patient's description of the progression of her skin findings, her symptoms, and the objective clinical examination all represent an atypical presentation of allergic contact dermatitis. We present this case to add to the literature regarding clinical presentation for allergy to fragrance and alpha-tocopherol and to highlight the need for repeat biopsies if a diagnosis of allergic contact dermatitis is strongly suspected.

Patch Test in Children Using Specific Series

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Positive patch tests in children was considered not common, but we believe that using specific series it is possible to get more relevant results.

Methods: Protocol was approved by the local Ethics Committee. 23 children with suspected allergic contact dermatitis or atopic dermatitis, from 2 to 15 years old were selected to patch test using the adult Brazilian series and 14 substances commonly used in infants (chloromethylisothiazolinone, tixocortol pivalate, methyldibromo glutaronitrile, disperse blue 106, methylisothiazolinone, sorbitan sesquioleate, diazolidinyl urea, *p*-tert Butylphenol, octyl gallate, benzalkonium chloride, fragrance-mix II, budesonide, alphatocopherol, propyl betaine cocoamide). We followed ICDRG criteria.

Results: 23 patients were analyzed, the youngest was 3 and the oldest was 14 years old, medium of 8, 12 girls, 13 boys, whites (72.8%). The overall prevalence of positive substances was 48 (96 hours). The most frequent haptens were: disperse blue (12.5%), methylisothiazolinone (10.41%), benzalkon chloride (10.41%), hydroquinone (8.3%), nickel sulfate (8.3%), formaldehyde (8.3%), potassium dichromate (8.3%), cobalt chloride (8.3%), sorbitan sesquioleate (4.1%), thimerosal (4.1%). We had at least one positive result with octyl gallate, methyldibromo glutaronitrile, diazolidinyl urea and *p*-tert butyl phenol.

Limitations: It is difficult the perfect contact of chambers in youngest children. Some allergens could be not relevant. We need to test more children to best results.

Conclusions: Our study adds more positive patch tests in children using some specific substances.

Allergic Contact Dermatitis to Topical Brimonidine Demonstrated with Patch Testing: Insights on Evaluation of Brimonidine Sensitization

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Brimonidine tartrate, an α2 receptor agonist used for the treatment of glaucoma, has now been approved for the treatment of persistent erythema in rosacea. Allergic contact dermatitis (ACD) to brimonidine was thought to be a possible adverse effect in 1% of patients in initial studies on rosacea, but details on patch testing was not provided. A few cases of ACD to the topical gel have recently been published but with inconsistent results on patch testing.

Allergic contact blepharitis caused by brimonidine eye drops for the treatment of open angle glaucoma was described on numerous occasions in the past but without epicutaneous testing to demonstrate causality.

We describe the case of a 59-year-old female with severe ACD to brimonidine tartrate gel. She had positive results on patch testing to dilutions of pure brimonidine. Also, significant photoexacerbation was found upon photopatch testing, suggesting that phototoxicity might play a role in the reactions associated with brimonidine. As more patients use brimonidine gel to treat erythematotelangiectatic rosacea, brimonidine should be considered when investigating a patient with facial dermatitis. Our results provide important insights on the optimal concentration to use when testing brimonidine. This could also prove useful when investigating for eyelid dermatitis in glaucoma patients.

Clinico Epidemiological Study of Occupational Dermatoses in Industrial Workers

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Background: Occupational dermatoses (OD) is a major public health problem in India and have significant economic impact.
Lacunae in existing knowledge-Lack of epidemiological data, comprehensive industry based studies with patch test confirmation in India.

Objective: To study prevalence and clinical pattern of OD among workers in selected industries. To confirm the diagnosis of allergic contact dermatitis (ACD) using patch testing (Indian standard series-Foot wear series-Cosmetic series-Fragrance series-Textile series)

Methodology and Observation:1739-workers screened after 16-industrial-visits (Automobile-Construction-Food processing-Cosmetic & Fragrance-Chemical-Textile-Shoe / leather-Health care)

Evaluation: Pre-set proforma-questionnaire - based.
37.8 % workers had OD, 17.76 % had non-occupational dermatoses and 44.33 % had no dermatoses
Highest prevalence in health care workers (HCW) followed by food handlers and least in textile workers.
Nail disorders-most common OD followed by ACD, callosity and ICD.
Protective measures either in the form of gloves, boots or both were being used by 25.81 % workers.
Discontinuation of job due to OD in 36.41 % workers.
Nickel sulphate-most common allergen in automobile, chemical and food handling industry
Potassium dichromate and cobalt sulphate-most common allergen in construction workers
Mercaptobenzothiozol-most common allergen among health care workers and shoe/leather industry workers, followed by Thiuram mix and formaldehyde.

Recommendation: We recommend that a national voluntary skin health surveillance system of workers at risk be established in India to provide insights into the occurrence, distribution, and secular trends of occupational dermatoses.

Total Potential Formaldehyde From "In-Use" Products

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Many consumer products contain formaldehyde from addition of free formaldehyde during formulation or from preservatives that can release formaldehyde during decomposition. The relationship between exposure to formaldehyde releasers and formaldehyde allergic contact dermatitis (ACD) remains controversial. How to evaluate the relevant formaldehyde exposure from these preservatives also represents a challenge. "In-use" products were obtained from formaldehyde sensitive patients and screened for formaldehyde using the chromotrophic acid spot test. Formaldehyde positive products that included shampoos, body wash, pharmaceutical creams, a moisturizer cream, sunscreen and mosquito spray were sent to NIOSH, Morgantown for formaldehyde quantification by gas chromatographic-electron impact mass spectrometry (GC-EIMS). Initially, all samples were diluted in varying amounts of water and deuterated 13C-formaldehyde was added to determine optimal dilution for formaldehyde recovery from each matrix. All samples and standards were derivatized using O-(2,3,4,5,6-pentafluorobenzyl)hydroxylamine hydrochloride at 70° C for 2 hr, then extracted into toluene and analyzed by GC- EIMS. Doubling the incubation time at 70° C did not increase measurable formaldehyde suggesting this as a measure of total releasable and/or free formaldehyde. All but one of the 10 products had detectable levels of formaldehyde ranging from 5.4 to 269 µg/g (ppm). The total potential formaldehyde product content of "in-use" products may vary with age and storage conditions due overall to product decay and formaldehyde evaporative or polymerization losses. The formaldehyde levels measured in this study were above the reported thresholds to elicit ACD in highly sensitized individuals.

Henna Dermatitis PPD, The Common Culprit: Report of 4 Cases

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Introduction: Henna is a ground paste of leaves of Lawsonia inermis plant commonly used in India for medicinal and cosmetic purposes. Paraphenylenediamine [PPD], used in black Henna, can induce allergic contact dermatitis [ACD]. Here, we report four young Indian women who developed ACD to black Henna.

Case Series:
Case 1: A 23-year-old woman presented with itching and irritation 8 days following temporary tattoo with Black Henna. Cases 2, 3 and 4 were 17, 20 and 19 years old, respectively, and presented with similar complaints after 7, 8 and 12 days of tattoo with henna, which showed scaly lichenified papules along the borders where black henna was used. All of them tested positive for PPD. They were treated with topical corticosteroid and advised to avoid PPD in future.

Discussion: Active ingredient of henna is lawsome. Paste of pure henna leaf is widely used for its anti-infective properties which does not induce allergic reaction. It is PPD used in black henna that causes allergic dermatitis. In all our cases, the reaction was more on the sun exposed site of forearm that further demonstrates the role of PPD.
Conclusion: Persons having allergy to PPD should avoid black Henna and vice versa.
Patient's written consent was obtained for clinical photograph.

Patch Testing Results in Patients with Vulvar Disease

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Objective/Background: Women with a pre-existing vulvar condition are susceptible to the development of allergic contact dermatitis because of the breakdown in the skin barrier and application of various topical medicaments and over-the-counter products. This study reports incidence of ACD, concomitant vulvar disease and relevant patch test results of UCSF patients, a tertiary referral center for both patch testing and vulvar dermatoses. Patients with recalcitrant vulvar pruritus and/or burning were patch tested and we report the most common allergens found as well as co-existing vulvar diagnoses.

Methods: This study is a retrospective chart review of all patients referred for patch testing from the vulvar dermatoses clinic from 2014-2016. Twenty-six patients underwent patch testing and were included in the study. Data on demographics, duration of symptoms, other vulvar diseases, history of atopy, personal care products and patch test results were collected. Each patient was patch tested to the North American Contact Dermatitis Series and some were tested to supplemental series based on history as well as personal products. Relevance was defined using two main categories: definite, possible and probable or unknown.

Results: 26 patients were patch tested and vulvar ACD was diagnosed in 16 of those patients, ~62%. The mean age was 50 years (range 5-80). Pruritus was the most common symptom. Duration of symptoms prior to presentation ranged from 2 months to 30 years. Eleven patients (42%) reacted to 4 or more allergens. Overall, 44% of the contact allergens detected were found to be relevant. The most common allergen group was fragrance accounting for of 18% of all reactions. Twelve patients had other, non-vulvar, sites of involvement. Fifty-six percent of patients with vulvar ACD had concomitant vulvar disease with lichen sclerosus being the most common diagnosis.

Conclusions: Pre-existing vulvar conditions are thought to predispose patients to other dermatological conditions such as allergic contact dermatitis due to a disruption in barrier function. Our results demonstrate that >50% of patients with vulvar disease had diagnoses of vulvar ACD. Fragrances are the most common culprit and should be eliminated in any patient with vulvar itching.

Patch Test Outcomes: Final Diagnoses and Patient Characteristics from the University of Colorado, 2013-2015

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Background: While identification of common allergens among those diagnosed with allergic contact dermatitis (ACD) has been the focus of much investigation, little attention has been paid to final diagnoses following patch testing in patients with negative results.
Objectives: To characterize patch test results, clinical relevance and final clinical diagnoses in relation to duration and location of rash. By examining outcomes related to patch testing, we hope to identify criteria that will aid in the selection of patients best suited for patch testing.

Methods: The University of Colorado Dermatology Clinic patch tested 340 adult patients, 18 years or older, during a 3-year period. A retrospective observational chart review of patient characteristics and outcomes was performed using ICD-9 codes to determine final diagnoses. COMIRB exempt protocol.

Results: 243 patients (71.5%) had one or more positive patch test (PPT); 61.5% had one or more relevant positive patch test results (RPPT). Top 10 allergens included nickel sulfate, Balsam of Peru, Neomycin, Bacitracin, Fragrance Mix I, Methylisothiazolinone Cobalt, MCI/MI, Propolis, and Propylene glycol. Taken together, personal products had higher prevalence rates that any of the top 10 allergens listed. Top rash locations included head/neck (55%), upper extremities (49.1%), and trunk (42.4%). Half of patients displayed dermatitis in one location. Diagnoses masquerading as ACD included eczematous dermatitis, seborrheic dermatitis, pruritus, psoriasis, perioral dermatitis/rosacea, actinic damage, bacterial infections, and acne.

Conclusion: Patch testing remains a meaningful diagnostic tool in patients with suspected ACD. Facial skin eruptions are most commonly associated with ACD, but can also be mimickers of allergic contact dermatitis.

Educational Interventions for the Primary Prevention of Occupational Contact Dermatitis: A Literature Review

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Background: Occupational contact dermatitis (OCD) is one of the most common occupational diseases. Skin protection training and education programs have shown promise in improving prevention practices and reducing frequency of contact dermatitis among a variety of worker groups.

Objective: To detail the features of effective primary prevention programs for OCD and identify gaps in existing programs.
Methods: A literature search was performed using the MEDLINE, CINAHL, and Cochrane databases. Peer-reviewed articles featuring educational interventions for OCD prevention were identified. Articles appraisal was based on adherence to prevention recommendations, clinical outcomes, self-assessed outcomes, disease-specific knowledge, and OCD prevalence.

Results: Thirteen studies were identified for in-depth review. Many studies included wet workers employed in healthcare, hairdressing, and food preparation; one program featured manufacturing workers. Irritant contact dermatitis was featured heavily; few programs covered allergic contact dermatitis. Few programs were evaluated for long-term effectiveness. Effective programs shared common elements in terms of content, delivery method, timing, and provider.

Conclusions: Effective programs were characterized by industry specificity, multi-modal learning, participatory elements, skincare resource provision, repetition, and management engagement. Long-term effectiveness, program structure applicability beyond OCD, the role of workplace health and safety culture, and cost-effectiveness of programs represent gaps in the literature.