



Eyelid Dermatitis in Patients Referred for Patch Testing: Retrospective Analysis of North American Contact Dermatitis Group Data, 1994 – 2016

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Background

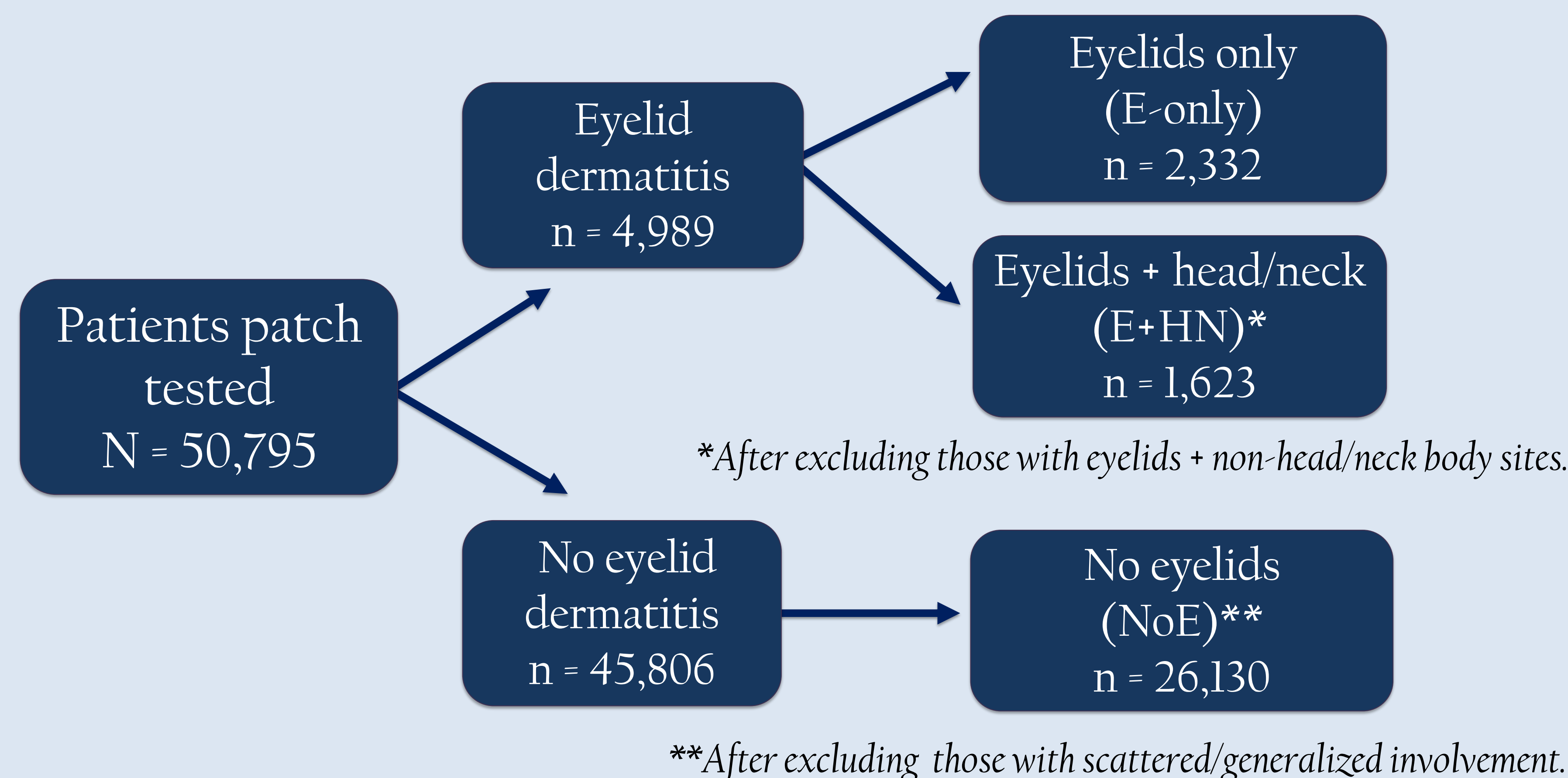
- Allergic and irritant contact dermatitis (ACD/ICD) may cause eyelid dermatitis
- Eyelids can be affected exclusively or with involvement of the head/neck¹
- Previous studies have identified **metals, fragrances, preservatives, and topical antibiotics** as common sensitizers^{2,3}

Objectives

- Inform the frequency, final diagnoses, and demographics of patients referred for patch testing with eyelid dermatitis
- Determine relevant allergens and irritants

Methods

- Retrospective analysis of NACDG data, 1994-2016



References

1. Zirwas MJ. Contact Dermatitis to Cosmetics. *Clin Rev Allergy Immunol*. 2019;56(1):119-128.
2. Rietschel RL, Warshaw EM, Sasseville D, et al. Common Contact Allergens Associated with Eyelid Dermatitis: Data from the North American Contact Dermatitis Group 2003-2004 Study Period. *Dermatitis*. 2007;18(2):78-81.
3. Valsecchi R, Imberti G, Martino D, Cainelli T. Eyelid dermatitis: an evaluation of 150 patients. *Contact Dermatitis*. 1992;27(3):143-147.

Results & Discussion

Table 1. Patient demographics

Demographic	E-only, n (%)	E+HN, n (%)	NoE, n (%)
Sex**	2,062 (88.4)	1,486 (91.6)	16,032 (61.4)
Age			
Mean (y)	48.0	48.6	47.4
>40**	1,596 (68.4)	1,156 (71.3)	17,033 (65.2)
Race			
Caucasian**	2,096 (90.3)	1,440 (89.3)	22,621 (87.0)
Hx of atopy			
Allergic rhinitis**	736 (31.7)	516 (31.9)	6,613 (25.4)
Atopic dermatitis**	486 (20.9)	412 (25.5)	4,719 (18.1)
Asthma	296 (12.7)	221 (13.7)	3,460 (13.3)
Final diagnosis			
Allergic contact**	1,012 (43.4)	865 (53.5)	12,046 (46.3)
Irritant contact**	396 (17.0)	159 (9.8)	3,752 (14.4)
Other dermatitis**	356 (15.3)	177 (10.9)	4,825 (18.5)
Atopic dermatitis**	306 (13.1)	223 (13.8)	1,790 (6.9)
Other diagnosis**	155 (6.7)	122 (7.5)	3,418 (13.1)
Seborrheic dermatitis**	105 (4.5)	72 (4.5)	215 (0.8)
Occupationally related			
Yes**	52 (2.2)	33 (2.0)	5,105 (19.6)

* Significant difference between E-only & NoE group, $p < 0.05$

Significant difference between E+HN & NoE group, $p < 0.05$

- E-only and E+HN patients significantly more likely: ($p < 0.01$)
 - Female
 - Caucasian
 - > Age 40
 - History of allergic rhinitis and atopic dermatitis
- In the E+HN group, there were 1,622 sites of primary involvement:

○ Eyelids	61.8%
○ Face, NOS	26.4%
○ Lips	4.9%
○ Eyes	2.6%
○ Scalp	2.2%
○ Neck	1.6%
○ Ears	0.4%
○ Nose	0.1%

Table 3. Common sources of ICD in eyelid dermatitis

	E-only, % n = 361	E+HN, % n = 241
Personal care products	67.6%	60.2%
Medicaments	11.4%	13.3%
Cleansers	6.7%	6.6%
Hair care products	2.8%	4.5%
Other/Unknown	11.5%	13.8%

Table 2. Top 20 currently clinically relevant allergens among patients with eyelid dermatitis

E-only, n (%)	E+HN, n (%)
Nickel sulfate, 211 (18.6)	Nickel sulfate, 218 (22.5)*
Fragrance mix I, 189 (16.5)	Fragrance mix I, 180 (18.3)
Methylisothiazolinone, 51 (16.5)	Methylisothiazolinone, 50 (17.7)
Gold sodium thiosulfate, 53 (14.7)*	Balsam of Peru, 123 (12.6)
Balsam of Peru, 136 (11.9)	Gold sodium thiosulfate, 32 (11.4)*
Formaldehyde, 27 (8.7)	Fragrance mix II, 49 (8.1)
Neomycin, 93 (8.1)*	Quaternium-15, 73 (7.5)#
Fragrance mix II, 52 (7.8)	Formaldehyde, 19 (6.7)
Quaternium-15, 76 (6.7)#	Carmine, 10 (6.5)*
Cinnamic aldehyde, 64 (6.2)	Cobalt chloride, 60 (6.1)
Carmine, 6 (5.5)*	DMAPA, 31 (6.1)*
Cobalt chloride, 58 (5.1)#	Oleamidopropyl dimethylamine, 31 (6.1)*
Benzalkonium chloride, 5 (5.0)	Cinnamic aldehyde, 49 (5.5)
Shellac, 12 (4.9)*	Neomycin, 53 (5.5)
Bacitracin, 56 (4.9)#	Bacitracin, 47 (4.8)
DMAPA, 27 (4.9)*	Thimerosal, 11 (4.7)*
Oleamidopropyl dimethylamine, 26 (4.7)*	MCI/MI, 44 (4.5)
Thiuram mix, 53 (4.6)#	Thiuram mix, 41 (4.2)#
Thimerosal, 12 (4.5)*	Shellac, 8 (3.5)*
MCI/MI, 50 (4.4)	Benzalkonium chloride, 2 (2.6)

* Significantly higher rates compared to NoE group, $p < 0.05$

Significant lower rates compared to NoE group, $p < 0.05$

- ACD was commonly caused by metals and fragrances; MI has emerged as an important allergen
- Both E-only and E+HN patients were significantly more likely to react to gold, carmine, shellac, DMAPA, oleamidopropyl dimethylamine, and thimerosal; E+HN also demonstrated increased relevant nickel reactions

Study limitations:

- Unknown distribution of eyelid dermatitis (e.g., upper vs. lower, unilateral vs. bilateral)
- Lack of long-term follow-up data