

Allergic contact dermatitis from ophthalmics: 2007

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We previously reviewed allergic contact dermatitis due to ophthalmic drugs and contact lens solutions. Since 1997, an additional 15 allergens have been reported. Here, we provide a review and discussion of these allergens.

Key words: allergic contact dermatitis; ophthalmics; ophthalmologics. © Blackwell Munksgaard, 2007.

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Allergic contact dermatitis due to ophthalmic drugs and contact lens solutions (1, 2, 3) have been previously reviewed. Since 1997, an additional 15 allergens have been reported (Table 1).

Although most reports fall under the drug classifications described before, carbonic anhydrase inhibitors, mucolytics and prostaglandins represent new allergens. Contact dermatitis due to the carbonic anhydrase inhibitor, dorzolamide, has reported at least 6 times; these inhibitors

are a relatively new class of ophthalmic drugs that reduce intraocular pressure in glaucoma. Only 1 case of contact dermatitis has been reported as a result of prostaglandins; latanoprost, now a first-line agent against glaucoma, increases fluid outflow from the eye, thus reducing pressure. The mucolytic, N-acetylcysteine, used to alleviate dry eyes has also been recently reported to cause a case of allergic contact dermatitis.

Table 1. Allergic compounds (update 2006)

Allergen (group)	PT concentration (%)	vehicle	PT-positive cases	PT-negative cases	References
<i>Carbonic anhydrase inhibitors</i>					
Dorzolamide	5/10	aq	1 cd	0/5	Shimada et al. (6)
	10/15	pet	1 cd	0/5	Shimada et al. (6)
	Eyedrops 2%	as is	1 cd	0/16	Mancuso and Berdondini (7)
	0.0001/0.001/0/0.01/0.1/2	aq	1 cd	0/16	Mancuso and Berdondini (7)
	40	ng	1 cd	0/10	Kalavala and Statham (8)
	Eyedrops 2%	as is	2 cd	0/20	Aalto-Korte (9)
	0.05/1	pet	1 cd	ND	Aalto-Korte (9)
	5	aq/pet	2 cd	0/10	Mata et al. (10)
<i>Antioxidants</i>					
Pirenoxone	Eyedrops (Catalin K)	as is	1 cd	ND	Inui et al. (11)
	0.005/1	aq	1 cd	ND	Inui et al. (11)
Sodium bisulfite	Eyedrops (Tathion)	as is	1 cd	0/10	Nagayama et al. (12)
	1/0.2	aq	1 cd		
<i>Prostaglandins</i>					
Latanoprost (PG)	Eyedrops (Xalatan)	as is	1 cd	ND	Jerstad and Warshaw (13)
<i>Antibiotics</i>					
Vancomycin	0.005/5	aq	1 cd	ND	Hwu et al. (14)
Sodium colistimethate	Eyedrops (Colimy C)	as is	1 cd	0/3	Sasaki et al. (15)
	1	aq/pet	1 cd	0/3	Sasaki et al. (15)
<i>Beta-blockers</i>					
Carteolol	1/2	aq	1 cd	0/23	Sanchez-Perez et al. (16)
	Eyedrops	as is	1 cd	0/5	Quirarte et al. (17), Jappe et al. (18)

Table 1. Continued

Allergen (group)	PT concentration (%)	vehicle	PT-positive cases	PT-negative cases	References
<i>Non-steroidal anti-inflammatory drugs</i>					
Trometamol	1/0.50/0.10/0.05	aq	1 cc/cd	ND	Bohn et al. (19)
<i>Antihistamines</i>					
Pheniramine maleate	1	aq	1 cc/cd	ND	Parente et al. (20)
<i>A2-adrenergic agonists</i>					
Apraclonidine	Eyedrops	as is	1 cc	0/20	Silvestre et al. (21)
	10	aq	1 cc	0/20	Silvestre et al. (21)
	1% eyedrops	as is	31/64 cc/cd	ND	Butler et al. (22)
Brimonidine	0.2% eyedrops	as is	1 cc	ND	Sodhi et al. (23)
	0.2% eyedrops	as is	1 cd	ND	Sodhi et al. (23)
<i>Mucolytics</i>					
N-acetylcysteine	10	aq	1 cd	0/14	Davison and Wakelin (24)
<i>Anaesthetics</i>					
Proparacaine	0.5	pet	1 cd	ND	Dannaker et al. (25)
<i>Others</i>					
Bismuth oxide	5/2/0.5	pet	1 cd	0/10	Wictorin and Hansoon (26)
	Ointment (Noviform)	as is	1 cd	0/10	Wictorin and Hansoon (26)
Parabens	Eyedrops (Clarvisan)	as is	1 cc/cd	0/25	Vilaplana and Romaguera (27)
	3	pet	1 cc/cd	0/25	Vilaplana and Romaguera (27)

cc, contact conjunctivitis; cd, contact dermatitis; pet, petroleum; aq, aqueous; ND, not done; PT, Patch test.

We continue to believe that an international standardization of ophthalmic trays is essential in the diagnosis of allergic reactions. Unless such a series is available, most ophthalmic intolerant patients will not be tested, resulting in often prolonged discomfort (and exposure) of the trial and error elimination and satisfaction methodology, as well as the potential loss of public health information. Many manufacturers have failed to provide samples for patch testing, resulting in a spuriously low case reported (unpublished observations). Optimal concentrations and vehicles are still to be defined.

Virgili and colleagues (4), concluded that negative patch testing is extremely common, even with a positive history of an allergic reaction due to ophthalmics. In spite of false negatives, however, patch testing still remains a preferred and first-line method to diagnose a suspected allergen until a better method is developed. Alternative methods of patch testing, including stripping and scratching the area of skin to be tested, could enhance accuracy because of increasing absorption. Recently, pretreatment with sodium lauryl sulfate (SLS), an anionic surface-active agent, has been found to be another effective method of patch testing. SLS may increase antigen presentation of the allergen and sensitivity to patch testing (5). In conclusion, if an allergic reaction is suspected, even after a negative patch test, repeating the test using the scratch method, an increased drug concentration, or application of SLS are all viable options. Multi-centre trials of these methods should aid their refinement, leading to increased accuracy.

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