World Society of Paediatric Ophthalmology & Strabismus

Allergic Eye Disease Specifically Allergic Conjunctivitis Consensus Statement 2023

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WHAT IS IT?

Allergic eye disease (AED) is a term used to describe a group of ocular disorders affecting the conjunctiva and cornea of the eyes[1]. It usually affects both eyes, but one eye may be more affected than the other. This consensus will address Allergic Conjunctivitis only.

WHO DOES IT AFFECT?

While children are most commonly affected, allergic conjunctivitis can affect individuals of any age.

HOW COMMON IS IT ?

The results of the ISAAC (International Study of Asthma and Allergies in Childhood) study provided a global picture of allergic diseases including rhinoconjunctivitis; it found the average overall prevalence of rhinoconjunctivitis to be 14.6% for 13 to 14-year-old children, but the prevalence was highly variable across the globe. The highest prevalence was seen in Africa (18.0%) and Latin America (17.3%), with the lowest in Northern & Eastern Europe (9.2%). Prevalence also varied in different regions of the same country e.g., large cities in Asia Pacific such as Ho Chi Minh City (Vietnam), Bangkok (Thailand), and Hong Kong (China) had higher prevalence rates, compared to adjacent areas or cities[2-5]. In a well-designed study of three regions in Saudi Arabia, the incidence of allergic conjunctivitis among adults was found to be 70% with a greater prevalence amongst females[6].

WHY DOES IT OCCUR?

The body's immune system reacts to an antigen – a foreign particle. AED is typically mediated by type 1 hypersensitivity allergic reactions and involve immunoglobulin E (IgE) mediated release of antibodies against the soluble antigen. This results in mast cell degranulation and release of histamine and other inflammatory mediators.

WHAT ARE THE SYMPTOMS AND SIGNS ?

Allergic eye disease is often underdiagnosed due to its common association with conditions such as rhinitis and asthma. Allergic conjunctivitis most commonly presents as seasonal allergic conjunctivitis (SAC) or perennial allergic conjunctivitis (PAC), presenting with redness, itching, and / or swelling of the conjunctiva. SAC, also commonly known as "hay fever", presents with seasonal increase in circulating allergens during spring or fall, while children with PAC may suffer from symptoms throughout the year, with seasonal flare ups.

Other severe types of AED include vernal keratoconjunctivitis (VKC) and atopic keratoconjunctivitis (AKC). (Refer to WSPOS consensus statement on vernal keratoconjunctivitis 2023).

Allergic conjunctivitis often causes intensely itchy eyes with a possible gritty sensation, mild redness, swelling of the conjunctiva (chemosis) and scanty mucoid discharge.

Exam reveals papillae which can be graded from 0-4, and conjunctival hyperemia with or without chemosis.

Any papillae above grade 2, any involvement of the limbus (Horner-Trantas dots) or cornea (epithelial erosions or shield ulcer) makes the diagnosis VKC (Refer to WSPOS consensus statement on vernal keratoconjunctivitis 2023)[1,7-9].

HOW DOES ALLERGIC EYE DISEASE AFFECT CHILDREN AND YOUNG ADULTS?

Unchecked, the milder forms of allergic eye disease can progress to the more severe forms, which can be sight threatening. Quality of life surveys of children with allergic eye diseases, especially the severe types, show that children with AED are unable to play with friends, go to the swimming pool, or even go out to play, because of their symptoms and signs.

Allergic eye disease and its wide range of symptoms and possible complications have the potential to affect the quality of life of children. Studies have shown that children with AED and their parents have a reduced quality of life, which may not be proportional to the clinical extent / severity of their ocular involvement. Put simply, a child may have mild ocular disease, but their quality of life is severely affected. Some studies showed this affection to extend to the quality of sleep of these children and their parents. This may include sleep onset delay, duration of sleep, disordered sleep breathing, and sleepiness during the day. The quality of life has been proven to show improvement with better control and treatment for these children and their families[10-13].

HOW DO WE TREAT ALLERGIC EYE DISEASE?

Management of AED is crucial for the preservation of vision and improvement of the quality of life of children suffering from them. A stepwise approach is often needed, and the management plan may need to be titrated and / or modified for each child.

FIRST STEP:

Obtain a thorough history from the patient or the family, by noting of details regarding the symptoms present and their duration, followed by a full ophthalmic examination. Photographic documentation of the condition at presentation and at different stages of therapy is common and beneficial in disease monitoring.

Significant systemic symptoms such as eczema, dermatitis, rhinitis, or asthma should prompt referral to an allergist, immunologist or pediatrician.

SECOND STEP:

- Allergen avoidance: This is very important. An allergist or immunologist should be involved when a child has VKC if possible. This is because if a single allergen is identified, desensitization by immunotherapy with the allergist may be used.
- Ocular Hygiene with regular ocular washing.
- Encourage hand hygiene.
- Cool compresses with a cloth that must be washed routinely to prevent the cloth harboring allergens.
- Cool showers maybe a better alternative for some children.
- If the child has a favorite cuddly toy, it may be carrying allergens, so consider putting it in a freezer once a week or washing it, if possible.
- Changing clothes before sleeping during allergy season may decrease allergen exposure by avoiding sleeping in pollen/allergen saturated clothes.
- Frequent washing of linens.
- Minimizing sharing of furniture with pets.
- Avoidance of eye rubbing to prevent complications like keratoconus.

THIRD STEP: TOPICAL AND SYSTEMIC THERAPY

Topical Eye Drops:

Always try and use **preservative free eyedrops.**

Ocular lubricants, preferably cold (stored in a refrigerator if possible)14 are also often helpful to keep the eye comfortable.

Anti-Allergy Drops

Topical antihistamine or a mast cell stabilizer may work in mild cases. Mast-cell stabilizers have a loading period to reach their full therapeutic effect. If seasonal recurrences are common, it is recommended to start mast-cell stabilizers prior to the onset of season and continue them throughout the season.

A topical **dual-acting mast cell stabilizer and antihistamine** may be effective early on, in mild to moderate cases. Dual-acting agents such as olopatadine, azelastine hydrochloride, epinastine, and ketotifen fumarate, act by stabilizing the mast cells by inhibiting mast cell degranulation and additionally inhibit leukocyte activity and dampen mediator release from mast cells, basophils, eosinophils, and neutrophils. They also competitively and irreversibly block histamine receptors in the conjunctiva and eyelids.

Interestingly, a metanalysis of all the different types of anti-allergy drops mentioned above, showed that no one drop was superior to any other, but the use of at least one was helpful in both allergic conjunctivitis and VKC1,[8,9,15].

Topical Non-Steroidal Anti-Inflammatory Drugs (NSAID)

Topical NSAID eyedrops such as 0.5% ketorolac have been described for use in allergic conjunctivitis. A study has shown that it may be as effective as olopatadine 0.1% eyedrops in alleviating the signs of allergic conjunctivitis. However, olopatadine tended to be more effective in reducing the ocular itching. Therefore, we tend not to use NSAID eyedrops unless it is the only available option[16].

Topical steroids

Topical steroids are not needed in allergic conjunctivitis, unless it is acute onset with marked chemosis, in which case a very short (3-5 days) course of topical steroids is warranted. The possibility of raised intraocular pressure even with only a few days' use of topical steroids, must be remembered and patients appropriately monitored and managed[17].

Calcineurin Inhibitors

These are not indicated in either SAC or PAC.

Systemic Therapy:

Oral anti-histamine e.g., cetirizine or loratadine maybe helpful in patients with extra-ocular manifestations, such as rhinitis and may often be started by the eye specialist for control of symptoms, ahead of evaluation by other specialists but only if the eye specialist feels able ; if not advice from a pediatrician should be sought[1,8,9].

REFERENCES

1. Wong IB, Nischal KK. Managing a child with an external ocular disease. J AAPOS. 2010 Feb;14(1):68-77.
2. Miyazaki D, Fukagawa K, Okamoto S, Fukushima A, Uchio E,Ebihara N, Shoji J, Namba K, Shimizu Y. Epidemiological aspects of allergic conjunctivitis. Allergol Int. 2020 Oct;69(4):487-495.
3. Asher MI, Weiland SK. The International Study of Asthma and Allergies in Childhood (ISAAC). ISAAC Steering Committee. Clin Exp Allergy. 1998 Nov;28 Suppl 5:52-66; discussion 90-1.
4. Asher MI, Montefort S, Björkstén B, Lai CK, Strachan DP, Weiland SK, Williams H; ISAAC Phase Three Study Group. Worldwide time trends in the prevalence of symptoms of asthma, allergic rhinoconjunctivitis, and eczema in childhood: ISAAC Phases One and Three repeat multicountry cross-sectional surveys. Lancet. 2006 Aug 26;368(9537):733-43.
5. Aït-Khaled N, Pearce N, Anderson HR, Ellwood P, Montefort S, Shah J; ISAAC Phase Three Study Group. Global map of the prevalence of symptoms of rhinoconjunctivitis in children: The International Study of Asthma and Allergies in Childhood (ISAAC) Phase Three. Allergy. 2009 Jan;64(1):123-48.
6. Alqurashi KA, Bamahfouz AY, Almasoudi BM. Prevalence and causative agents of allergic conjunctivitis and its determinants in adult citizens of Western Saudi Arabia: A survey. Oman J Ophthalmol. 2020 Feb 17;13(1):29-33.
7. Robles-Contreras, Atzin & Santacruz, Concepcion & Ayala, Julio & Bracamontes, Eduardo & Godinez, Victoria & Estrada, Iris & Estrada-Parra, Sergio & Chávez, Raúl & Perez-Tapia, Mayra & Bautista de Lucio, Victor & Jiménez-Martínez, María C. (2011). Allergic Conjunctivitis: An Immunological Point of View. DOI:10.5772/26470.
8. Bonini S, Gramiccioni C, Bonini M, Bresciani M. Practical approach to diagnosis and treatment of ocular allergy: a 1-year systematic review. Curr Opin Allergy Clin Immunol. 2007 Oct;7(5):446-9.
9. O'Brien TP. Allergic conjunctivitis: An update on diagnosis and management. Curr Opin Allergy Clin Immunol. 2013 Oct;13(5):543–9.
10. Strube YNJ. Drawing Attention to the Burden of Allergic Conjunctivitis in Children and Their Families. JAMA Ophthalmol. 2021 Aug 1;139(8):837–8.
11. Zhang SY, Li J, Liu R, Lao HY, Fan Z, Jin L, Liang L, Liu Y. Association of Allergic Conjunctivitis With Health-Related Quality of Life in Children and Their Parents. JAMA Ophthalmol. 2021 Aug 1;139(8):830-837.
12. Li, J., Zhang, S. yao, Fan, Z., Liu, R., Jin, L., & Liang, L. Impaired sleep quality in children with allergic conjunctivitis and their parents. Eye (Lond). 2022 Jul 22
13. Fan Z, Yang B, Sun L, Zhang T, Zhang SY, Jin L, Liu Y, Liang L. Effect of Anti-allergic Therapy on Quality of Life in Children with Allergic Conjunctivitis and Their Parents. Ocul Immunol Inflamm. 2022 Aug 1:1-7.
14. Shawaf SS, Elkum N, Tabbara KF. Effect of cold BSS vs naphazoline 0.025% on ocular surface temperature. Eye (Lond). 2006 Aug;20(8):964-5.
15. Roumeau I, Coutu A, Navel V, Pereira B, Baker JS, Chiambaretta F, Bremond-Gignac D, Dutheil F. Efficacy of medical treatments for vernal keratoconjunctivitis: A systematic review and meta-analysis. J Allergy Clin Immunoln 2021 Sep;148(3):822-834. doi: 10.1016/j.jaci.2021.03.026. Epub 2021 Apr 2
16. Yaylali V, Demirlenk I, Tatlipinar S, Ozbay D, Esme A, Yildirim C, Ozden S. Comparative study of 0.1% olopatadine hydrochloride and 0.5% ketorolac tromethamine in the treatment of seasonal allergic conjunctivitis. Acta Ophthalmol Scand. 2003 Aug;81(4):378-82.
17. Ng JS, Fan DS, Young AL, Yip NK, Tam K, Kwok AK, Lam DS. Ocular hypertensive response to topical dexamethasone in children: a dose-dependent phenomenon. Ophthalmology. 2000 Nov;107(11):2097-100.