Recent Trends In Management of Allergic Conjunctivitis

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Brief Introduction:

Allergic conjunctivitis is caused by airborne allergens contacting the eye, which leads to immunoglobulin E (IgE)-mediated local mast cell degranulation and allergic inflammation. It typically presents as bilateral ocular pruritus, redness, and watery discharge.Allergic conjunctivitis could be categorized as seasonal allergic conjunctivitis (SAC), perennial allergic conjunctivitis (PAC), atopic keratoconjunctivitis (AKC), vernal keratoconjunctivitis (VKC), and giant papillary conjunctivitis (GPC).

Allergic conjunctivitis symptoms may be:

* Perennial (all year round) - due to exposure to dust mite, animal dander, indoor and outdoor mould spores and occasionally foods or food additives.
* Seasonal - due to airborne allergens such as pollen of grasses, trees and weeds. Pollen allergy symptoms vary from day to day, depending on the weather, improving in wet weather and worsening on hot windy days or after thunderstorms. There are also seasonal variations in some airborne mould spores, which may cause seasonal symptoms.

Allergic conjunctivitis could result from type I and type IVhypersensitivity reactions of the ocular surface after exposure to a variety of airborne allergens arising in the home, from food, or other sources.Investigation of these causes is necessary to guide an appropriate treatment and management.

DIAGNOSIS

Diagnosis of allergic conjunctivitis may be made on the basis of a typical history of ocular and periocular itching, redness, swollen eyelids, foreign body sensation and chemosis throughout the allergic attack with exacerbation and remission.A positive family history of asthma and hay fever or any other allergen contact history is noted. Slit lamp examination done and looked for congestion,papillae,follicles,horner tranta's spot etc . Skin prick tests are helpful in establishing a definite diagnosis. However, conjunctival scraping stained with modified Wright Giemsa stain to look for eosinophil in cooperative patient is a helpful diagnostic test. Early diagnosis and management will ameliorate the symptoms and restore good vision.

TREATMENT

Identifying and removing the cause of allergic conjunctivitis, where possible, is ideal when an allergic cause has been confirmed from allergy testing. For example:

* House dust mite minimisation measures in the bedroom (removing carpet, using barrier encasing of pillows and mattress, washing bedding in hot water).
* Removing the cat from the house in sensitive individuals.

It is also important to exclude the presence of a foreign body.

Symptoms of allergic conjunctivitis are generally mild to moderate and respond to washing eyes with cold water, ice packs and cold water compresses. However, symptoms can sometimes be extremely severe and debilitating and require medication. Treatment options include:

Allergen avoidance - Avoidance or reduction of contact with known allergens and appropriate management of environmental exposure are critical to effective management of allergic conjunctivitis, especially in more severe cases.

?Preventive steps to reduce symptoms of seasonal allergic conjunctivitis (SAC) include use of air conditioning when possible, limiting outdoor exposure, and keeping car and home windows closed during the peak pollen seasons.

For patients with perennial allergic conjunctivitis (PAC), prevention includes avoidance of the specific allergens that are causing symptoms in a specific patient. For those allergic to dust mites, helpful measures include replacing old pillows, blankets, and mattresses; using dust mite allergen impermeable covers for pillows, comforters, and mattresses; frequently washing beddings; reducing humidity; and frequently vacuuming and dusting the home. Additionally, other reservoirs of dust should be removed, such as old carpets, old furniture, and old curtains or drapes. When the culprit allergen is animal dander, the animal may need to be removed from the home, and old carpets, furniture, and curtains should be removed or cleaned thoroughly. The avoidance and reduction of indoor allergen levels are reviewed separately.

Avoidance measures for indoor allergens can be expensive, and some clinicians prefer to pursue testing for sensitivity to specific allergens by an allergist prior to recommending involved allergen remediation measures

TOPICAL MEDICATIONS

ARTIFICIAL TEAR DROPS

Artificial tear substitutes provide a barrier function and help to improve the first-line defense at the level of conjunctival mucosa. These agents help to dilute various allergens and inflammatory mediators that may be present on the ocular surface, and they help flush the ocular surface of these agents. Chilled tears, as well as any topical medication, provide an added degree of relief, as well as homeopathic vasoconstriction. Similarly, cold compresses can be extremely useful to avoid the customary irrational rubbing response to chronic or paroxysmal pruritus.

VASOCONSTRICTOR/ANTIHISTAMINE COMBINATIONS

Eye drops containing both an antihistamine and a vasoconstrictor are widely available without a prescription. Although we do not specifically recommend these products if a patient presents for treatment, some patients have accessed these medications on their own. The antihistamine component competitively and reversibly blocks histamine receptors in the conjunctiva and eyelids, thus inhibiting the actions of the primary mast cell-derived mediator. The vasoconstrictor component activates the postjunctional, alpha-adrenergic receptors found in blood vessels, causing vasoconstriction and decreased conjunctival edema . Examples of topical antihistamine/ vasoconstrictor drugs include naphazoline and pheniramine (available as Naphcon-A, Opcon-A, Visine-A, and others). Dosing is up to four times daily during acute symptoms.These topical medications are appropriate for short-term (eg, less than two weeks) or episodic use only. Regular use for longer than two weeks can lead to rebound hyperaemia because of the vasoconstrictor component . Patients should understand that they may have increased eye redness for several days when they stop using these medications.

Single agent topical products (i.e., vasoconstrictors or antihistamines only) are also available without a prescription, although the combination products usually work better .

ANTIHISTAMINES IN COMBINATION WITH MAST CELL STABILIZERS

Antihistamines with mast cell stabilizing properties include olopatadine (Patanol, Pataday, Pazeo),alcaftadine (Lastacaft), bepotastine (Bepreve,betoact), azelastine HCl (Optivar), epinastine (Elestat), ketotifen fumarate (generic, Ketotifen), and emedastine (Emadine). Ketotifen fumarate is available in a generic formulation and does not require a prescription (in the United States).

These agents have two main actions:

As antihistamines, they competitively and reversibly block

histamine receptors in the conjunctiva and eyelids, thus inhibiting the actions of the primary mast cell-derived mediator . This also helps reduce the late phase of the allergic response.

As mast cell stabilizers, they inhibit mast cell degranulation, limiting the release of histamine, tryptase, and prostaglandin D2 (PGD2). Release of these proinflammatory mast cell mediators is the first step in the allergic cascade. These drugs also inhibit leukocyte activity and dampen mediator release from basophils, eosinophils, and neutrophils.

Dosing is twice per day for most products. Pataday, Pazeo, and Lastacaft are once-daily preparations. Onset of action is within minutes for most drugs. However, at least two weeks of therapy should be allowed in order to assess the full efficacy of prophylactic therapy with these agents, since it may take some time for the inflammation to be controlled and symptoms to subside completely.

Common side effects include stinging and burning upon instillation. Patients may find it helpful to refrigerate the drops and/or use refrigerated artificial tears before using these medications. Other adverse effects include headache and increased ocular dryness.

MAST CELL STABILIZING AGENTS include cromolyn sodium (generic, Opticrom), nedocromil (Alocril), lodoxamide-tromethamine (Alomide), and pemirolast (Alamast). Full efficacy is reached 5 to 14 days after therapy has been initiated and therefore these medicines are NOT useful for acute symptoms. In addition, dosing of mast cell stabilizers is four times daily, compared with twice daily for most agents with combined actions. Because of these limitations, mast cell stabilizers are often impractical, but they may provide an option for patients with seasonal allergic conjunctivitis (SAC) who do not tolerate other therapies and can anticipate when their symptoms will start. Such patients should begin treatment two to four weeks before the pollen season. However, for most patients, antihistamines with mast cell stabilizing properties are more convenient and effective:

?One randomized study compared the use of cromolyn sodium (4 percent, four times daily) for two weeks prior to allergen challenge with a single drop of ketotifen fumarate (0.025 percent) given just before allergen challenge. The single drop of ketotifen was superior in controlling itching and redness at 15 minutes and at 4 hours after challenge.

An analysis comparing the economic cost with the United Kingdom's National Health Service of prescribing olopatadine or cromolyn concluded that the more expensive olopatadine resulted in sufficiently fewer return visits than it was for the more cost-effective option.

IMMUNOMODULATORY AGENTS:Cylclosporin e/d and Tacrolimus e/o for refractory VKC cases immunomodulatory and anti-inflammatory activity.It suppresses T cell activation and IL-2 production by binding to an immunophilin and inhibiting the enzymatic activity of calcineurin.

NSAIDs-Nonsteroidal anti-inflammatory drugs (NSAIDs) act on the cyclooxygenase metabolic pathway and inhibit production of prostaglandins and thromboxanes. They have no role in blocking mediators formed by the lipoxygenase pathway, such as leukotrienes. Common NSAIDs that are approved for allergic indications include ketorolac tromethamine (Acular).

CORTICOSTEROIDS

Corticosteroids remain among the most potent pharmacologic agents used in the treatment of chronic ocular allergy. They act at the first step of the arachidonic acid pathway by inhibiting phospholipase, which is responsible for converting membrane phospholipid into arachidonic acid. By preventing the formation of arachidonic acid, corticosteroids effectively block both cyclooxygenase and lipoxygenase pathways, in contrast to NSAIDs, which act only on the cyclooxygenase pathway.

Topical glucocorticoids should only be used for short "pulse therapy" of two weeks maximal duration in patients for whom antihistamines with mast cell stabilizing properties have not controlled symptoms adequately. Ocular side effects from glucocorticoids can be vision threatening and include cataract formation, elevated intraocular pressure (IOP), glaucoma, and secondary infections.

"Soft" steroids are a group of topical glucocorticoids that have a greatly reduced risk of causing increased IOP since they are formulated such that they undergo rapid inactivation upon penetration of the cornea . "Soft" steroids include Lotemax and Alrex (loteprednol), Vexol (rimexolone), Pred Mild (prednisolone), FML (fluorometholone), HMS (medrysone). The side effect risk profile is lowest with the newer generation steroids (loteprednol and rimexolone). Loteprednol is also available as a suspension, as a gel, and in 0.2 and 0.5 percent concentrations.

"Soft" steroids are administered two to four times per day for approximately two weeks. This can help slow the immune response so that the mast cell stabilizers, antihistamines, and artificial tears have a greater chance to work. In contrast, use of these medications for greater than six weeks is associated with a significantly increased risk of complications.Topical glucocorticoids that have amuch higher risk of raising IOP include prednisolone acetate (1 percent) and dexamethasone phosphate (0.1 percent). We do not recommend use of these agents by clinicians who are not experts in ophthalmology. These preparations are indicated for severe inflammation.

Use of multiple eye drops - For patients using multiple types of eye drops, such as a topical medication and artificial tears, it is advisable to space drops a few (three to five) minutes apart if possible, so that instillation of a second drop does not wash out the first. These recommendations need to be balanced with the lifestyle limitations and realities faced by the patient. In addition, closure of the eyelids for a few seconds after drug instillation helps absorption into ocular tissues. In contrast, repetitive blinking should be avoided as much as possible, as it generates negative pressure and causes topical medications to wash out of the ocular surface more quickly.

IMMUNOTHERAPY-

Immunotherapy is a mainstay in the systemic management of allergies. Traditionally, immunotherapy is delivered via subcutaneous injection. However, sublingual (oral) immunotherapy (SLIT) is gaining momentum among allergists. Numerous articles have analyzed the effects of SLIT on allergic conjunctivitis. Preliminary indications are that SLIT may have a moderate effect on the signs and symptoms of allergic conjunctivitis, but further analysis is necessary.A 2012 study confirmed that SLIT may significantly reduce symptoms in children with grass pollen-allergic rhinoconjunctivitis. The preparation studied had significant effects on allergen-specific antibodies and was well tolerated

SYSTEMIC THERAPIES

Oral antihistamines are often used in the management of allergic conjunctivitis that is associated with nonocular symptoms.

Oral antihistamines - Oral, nonsedating, over-the-counter, or prescription H1 antihistamines may be helpful for patients who also report rhinitis and generalized pruritus. However, when ocular symptoms are the main presenting problem, topical (ocular) medications are preferred because they are faster acting and less likely to cause systemic side effects. In addition, randomized trials have shown that topical medications are more effective than oral therapies for ocular symptoms. Specifically, topical olopatadine was more effective than oral loratadine or fexofenadine, and topical ketotifen was more effective than oral desloratadine.. In addition, oral antihistamines can cause drying of mucosal membranes and decreased tear production in some patients, especially those with concomitant dry eye .

Nonsedating oral antihistamines available without a prescription include fexofenadine (generic, Allegra),

loratadine (generic, Claritin), cetirizine (generic, Zyrtec). Cetirizine causes sedation in up to 10 percent of patients, despite its categorization as nonsedating. In the United States, desloratadine (Clarinex) and levocetirizine(Xyzal) require a prescription.

Several oral antihistamines have demonstrated efficacy in the treatment of allergic conjunctivitis, compared with placebo, in studies of varying rigor . Oral administration of antihistamines results in peak serum levels in 30 minutes to 3 hours, depending on the specific drug. Full effects are seen after several days of use. Thus, these agents have a slower onset of action compared with topical agents, although this is not relevant if they are taken prophylactically.

SURGICAL TREATMENT

Severe cases of corneal shield ulcer may require superficial keratectomy to promote epithelial regeneration. This debridement also serves to obtain a direct culture specimen in the event that secondary infection ensues and helps guide prophylactic topical antimicrobial therapy. Generally, shield ulcers are chronic conditions that are often refractory to conventional therapy. There have been reports of excimer laser phototherapeutic keratectomy (PTK) being used to remove fibrin deposits on the Bowman layer and theoretically facilitate epithelial healing.

Other surgical procedures, such as cryoablation of giant papillae or surgical removal of papillae with mucosal grafting, generally are not required, but they may be helpful in extremely advanced cases. Remember that since VKC is a self-limited disease, extensive reconstructive surgery may not have an acceptable risk-benefit ratio.

SUMMARY :

There are various treatment modalities each depending on cause and presentation of signs and symptoms also depends on specific type of allergic conjunctivitis. It is very common disorder which we face in our daily outdoor practice and despite new evolving treatment options still permanent cure is not achieved neverthiless our motto should be maximum relief to patients complains.

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