

A Review on Most Ophthalmic Viral Disease Conjunctivitis (Eye Flu)

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ABSTRACT

Ophthalmology clinics around the world see a lot of patients with conjunctivitis. Severe pain, impaired vision, and a painful pupillary reaction are all red flags for more serious intraocular disorders that should be taken into account while treating suspected cases of conjunctivitis. In patients with unusual findings and a chronic course, it is also important to have a complete medical and ocular history and do a comprehensive physical examination. The existence of a systemic ailment affecting the conjunctiva may be shown by concurrent findings on physical exam and pertinent history. The vast majority of cases of conjunctivitis still originate from viruses. Bacterial conjunctivitis is the second most prevalent cause of infectious conjunctivitis; however it is much less common than viral conjunctivitis. Nearly half of the population experiences allergic conjunctivitis, characterised by symptoms like itching, mucoid discharge, chemosis, and edoema of the eyelids. A patient with conjunctival irritation and discharge who has used preservative-containing eye drops regularly likely has toxic conjunctivitis. Timely diagnosis, proper classification of the various aetiologies, and suitable treatment are essential components of effective management of conjunctivitis.

Keywords- Conjunctivitis, Bacterial disease, Pink eye, Allergic.

I. INTRODUCTION

Conjunctivitis is characterized by inflammation and swelling of the conjunctival tissue, accompanied by engorgement of the blood vessels, ocular discharge, and pain. Many subjects are affected with conjunctivitis worldwide, and it is one of the most frequent reasons for office visits to general medical and ophthalmology clinics. More than 80% of all acute cases of conjunctivitis are reported to be diagnosed by non-ophthalmologists including internists, family medicine physicians, pediatricians, and nurse practitioners.^[1] This imposes a great economic burden to the healthcare system and occupies a great proportion of the office visits in many medical specialties. It is

estimated that the cost of treating bacterial conjunctivitis is \$857 million annually in the United States alone.^[2]

It has been reported that nearly 60% of all patients with acute conjunctivitis receive antibiotic eye drops; and the vast majority receive their prescription from a non-ophthalmologist physician. For example, 68% of patients who visited a physician at an emergency room received antibiotic eye drops while this figure dropped to 36% for those who saw an ophthalmologist.^[1] Interestingly, patients from a higher socioeconomic status were more likely to receive and fill a prescription for their conjunctivitis.^[3]

There are several ways to categorize conjunctivitis; it may be classified based on etiology,

chronicity, severity, and extend of involvement of the surrounding tissue. The etiology of conjunctivitis may be infectious or non-infectious. Viral conjunctivitis followed by bacterial conjunctivitis is the most common cause of infectious conjunctivitis, while allergic and toxin-induced conjunctivitis are among the most common non-infectious etiologies. In terms of chronicity, conjunctivitis may be divided into acute with rapid onset and duration of four weeks or less, subacute, and chronic with duration longer than four weeks.^[3] Furthermore, conjunctivitis may be labeled as severe when the affected individuals are extremely symptomatic and there is an abundance of mucopurulent discharge. Conjunctivitis may be associated with the involvement of the surrounding tissue such as the eyelid margins and cornea in blepharoconjunctivitis and viral keratoconjunctivitis, respectively^[4]



Figure 1: Eye Flu (Pink Eye)

II. CAUSES^[5,6,7]

Eye flu is an infectious disease; thus, it is important to know its causes. The major causes of eye flu disease are:

1. Viral Infections

Viruses are the most common means by which eye flu is easily spread. Viruses like

Adenoviruses and enteroviruses can enter the conjunctiva (a thin membrane covering the eye's front part) and cause eye infections. They are responsible for causing itching, excessive tearing and redness in the eyes.

These viruses are contagious, and thus it is important to avoid crowded places or close contact situations.

2. Bacterial Infections

The eye flu symptoms are also triggered by bacterial infections. Bacteria like *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Staphylococcus aureus* can easily invade the conjunctiva, resulting in bacterial conjunctivitis.

3. Allergic Reactions

Allergic reactions are another eye flu cause that results in watery, red and itchy eyes. Allergens like dust mites, pet dander, certain cosmetics and pollens

interact with the immune system and thus cause allergic conjunctivitis.

4. Irritants and Foreign Objects

Irritants and foreign particles can also induce eye flu symptoms. These particles include smoke, pollution, chlorine from swimming pools etc. Due to these irritants, you may feel itching and redness in your eyes.

III. SYMPTOMS

The significant eye flu symptoms are:

1. Redness and Irritation

Redness and irritation are the primary eye flu symptoms. It is caused by the Inflammation of the conjunctiva of the eyes. The blood vessels of the eyes get dilated and thus appear pink.

People may experience feelings of itchiness, scratchiness, or foreign body sensation in their eyes. These symptoms tend to be more noticeable in the morning or after periods of rest.

2. Watery Eyes

Excessive tear production, leading to watery or teary eyes, is another common eye flu symptom. The main reason for watery eyes is the inflammation of the conjunctiva, which can stimulate the tear glands, causing an overflow of tears.

Watery eyes can lead to discomfort and blurred vision, making it challenging to perform daily activities.

3. Sensitiveness to Light

People with the eye flu may feel photophobia, a condition where the eyes get sensitive to light. Exposure to bright lights or sun can cause discomfort and pain in the eyes, leading persons to squint or shield their eyes from light sources.

4. Discharge from The Eyes

A thick, sticky discharge from the eyes observed during waking up is a characteristic symptom of bacterial conjunctivitis. This discharge is often yellow or greenish and can make the eyelids stick together. Viral conjunctivitis may also produce a watery or clear discharge from the eyes.

5. Gritty Sensation

Some persons with eye flu may have a gritty or sandy sensation as if debris is present. This feeling of grit is often associated with the inflammation of the conjunctiva.

6. Crusting of Eyelids

In cases of bacterial conjunctivitis, the discharge from the eyes may dry and harden overnight, forming crusts around the eyelids. Upon waking up, individuals may find it difficult to open their eyes due to the presence of these crusts.

7. Swelling of Eyelids

Swelling the eyelids is a possible symptom of eye flu, primarily caused by allergies. Allergic

conjunctivitis can lead to eyelid oedema, making the eyes appear puffy and swollen.

8. Discomfort While Blinking

People with eye flu may feel discomfort or pain while blinking due to the inflammation of the conjunctiva. Blinking can exacerbate the itchiness and cause more discomfort.

9. Eye Discharge Contagiousness

The contagiousness of flu in the eyes depends on its underpinning cause. Viral and bacterial conjunctivitis are highly contagious and can spread from person to person through direct contact or exposure to respiratory drops. On the other hand, allergic conjunctivitis is not infectious and does not spread from person to person.

IV. OPHTHALMIC DRUG THERAPIES FOR ACUTE BACTERIAL CONJUNCTIVITIS^[9,10,11,12]

Bacterial conjunctivitis generally last 1-2 weeks and is usually self-limiting. The mainstay of treatment for bacterial conjunctivitis is topical antibiotic therapy, with the intent of significantly reducing the duration of symptoms and likelihood of contagion. Ideally, the antibiotic should be specific for the causative organism. Unfortunately, bacterial culturing, although recommended, is not always available nor cost-effective for routine cases, and Gram stain may take several days to yield results.

For mild and non-vision-threatening bacterial conjunctivitis, older-generation antibiotics should be used. Later-generation antibiotics should be reserved for more serious infections to minimize creation of bacterial resistance in the ocular surface flora.^[25] For moderate to severe bacterial conjunctivitis, the latest-generation fluoroquinolones provide excellent gram-negative and some gram-positive bacterial coverage. Fortified antibiotics are also used in severe cases. Systemic antibiotics are indicated for *N gonorrhoeae* and chlamydial infections. Surgical intervention is required only when indicated for the treatment of causative conditions, such as hordeolum, nasolacrimal duct obstruction, or sinusitis.

Steroid use in combination with antibiotics is controversial, and results are mixed in terms of decreasing corneal scarring. Unfortunately, steroids may slow the rate of healing, increase the risk of corneal melting, and increase the risk of elevated IOP.

Povidone-iodine solution 1.25% ophthalmic solution may be a safe and viable alternative to topical antibiotics for treating bacterial conjunctivitis,^[10] especially in resource-poor countries, where antibiotics may be hard to come by and/or expensive.

Inpatient care for bacterial conjunctivitis is highly unusual and would be provided only if hospitalization is indicated for other reasons or if

antibiotic treatment is required every 15 minutes around the clock (severe cases). It is important to realize that, in the inpatient setting, the differential diagnoses must be carefully considered through internal medicine consultation since these patients tend to be ill. Therefore, it is more common to see a red eye due to endogenous endophthalmitis, hyperacute gonorrheal conjunctivitis, orbital cellulitis, or a perforated corneal ulcer in this population.

Serious consideration should be given to admitting patients with hyperacute bacterial conjunctivitis if the entire cornea cannot be visualized, as there may be an early peripheral corneal ulceration threatening perforation, especially in *Neisseria* infections. Topical antibiotic, proper hygiene, and isolation are considerations for these patients.

V. DISEASE ASSOCIATED WITH CONJUNCTIVITIS^[13-18]

Conjunctivitis may be the initial presentation for many systemic diseases; therefore, a thorough history and systemic evaluation in selected cases may help in early diagnosis of many potentially disabling and even life-threatening conditions.

VI. REACTIVE ARTHRITIS

Conjunctivitis is one of the most common ocular manifestations of reactive arthritis; other associated ocular entities include uveitis, episcleritis, scleritis, and keratitis. Conjunctivitis in reactive arthritis manifests itself as conjunctival hyperemia with purulent discharge. Occurring in nearly one third of the patients, conjunctivitis is an essential component of the "Reiter's triad". Conjunctivitis usually happens early in the course of reactive arthritis and it may even precede it in some instances; given its mild initial clinical presentation, it is often missed. The signs and symptoms usually abate within one to four weeks; however, in some cases, progression to more severe ocular surface problems may ensue.

VII. ROSACEA

Ocular surface may also be involved in the inflammatory course of ocular rosacea. The clinical findings include a follicular and papillary conjunctival reaction in association with interpalpebral conjunctival hyperemia. In addition, cicatrization of the conjunctival tissue, mimicking trachoma, may be seen in these patients. Conjunctival scarring secondary to entropion and trichiasis has been reported to occur in approximately 10% of the cases. Conjunctival granuloma, pinguecula, phlyctenule, and peripheral

corneal infiltration and phlyctenule are amongst some of the other findings associated with ocular rosacea.

VIII. GRAFT-VERSUS-HOST DISEASE

Conjunctival involvement is rarely seen in acute graft-versus-host disease (GVHD); however, its presence indicates more severe systemic involvement and a poor prognosis. Conjunctival involvement in GVHD ranges from mild conjunctival injection to pseudomembranous and cicatrizing conjunctivitis. In acute GVHD, conjunctivitis is often ulcerative and manifests itself with numerous alternating episodes of conjunctival hemorrhage and exudative discharge. Sterile purulent discharge, pseudomembrane formation, and scarring are amongst the other findings in this condition.^[153] In the chronic form of GVHD, one-fourth to three-fourth of the patients suffer from dry eyes, where its severity correlates with the severity of GVHD. Frequently, keratoconjunctivitis sicca persists after remission of GVHD.

Four stages of conjunctival GVHD have been described in the literature. Stage 1 is marked by simple conjunctival injection. Stage 2 is characterized by an exudative response, which may lead to conjunctival chemosis. Stage 3 is characterized by pseudomembrane formation; majority of the patients are diagnosed at this stage of the diseases. Stage 4 is manifested by scarring and cicatrization of the conjunctival tissue.

IX. OCULAR CICATRICAL PEMPHIGOID

Ocular cicatricial pemphigoid is a rare condition. Patients are often in their fifth and sixth decades of life at presentation, and females are up to three times more frequently affected than males. Chronic inflammation, loss of conjunctival goblet cells along with an abnormal mucosal epithelial turn-over leads to desiccation of the ocular surface in this condition. Disruption of conjunctival immune network increases the risk of ocular surface infection. Recurrent infectious conjunctivitis and trichiasis may lead to keratinization of the surface epithelium.^[158] Definitive diagnosis requires direct immunofluorescence, where deposits of immunoglobulins and/or complements produce areas of linear hyperfluorescence at the epithelial basement membrane. Systemic immunosuppression along with frequent lubrication is often needed to adequately control this condition.

X. STEVENS-JOHNSON SYNDROME AND TOXIC EPIDERMAL NECROLYSIS

Ophthalmic manifestations of the acute stages of Stevens-Johnson syndrome (SJS) and toxic

epidermal necrolysis (TEN) range from conjunctival hyperemia to near-complete sloughing of palpebral conjunctiva and lid margins. Acute ocular involvement is reported to occur in up to 88% of the cases. It remains unclear whether the severity of ocular involvement is any different between SJS and TEN. Long-term adverse consequences following the acute stage of ocular surface disease include severe dry eyes, symblepharon formation, corneal limbal stem cell deficiency, and corneal scarring.

XI. CONCLUSION

In the pediatrician's examining room, conjunctivitis is a prevalent complaint. The history and physical examination of a patient might provide important diagnostic clues about the most likely cause. Most occurrences of conjunctivitis in children are caused by bacteria and manifest themselves clinically as purulent discharge and matting of the eyes. As with other upper respiratory symptoms, viral conjunctivitis causes a gritty feeling and watery discharge. In most cases, both eyes are affected by allergic conjunctivitis, and symptoms tend to flare up when pollen counts rise. People who wear contact lenses, live in particularly polluted areas, and those whose symptoms extend beyond conjunctivitis are more likely to be affected by these and other less common causes of the condition. Antibiotics may be indicated for some cases of bacterial conjunctivitis, however this will vary according to the severity of the infection, the patient's and family's preferences, and the clinician's therapeutic philosophy. If a case doesn't improve after a reasonable amount of time, it should be sent to someone who specialises in eyes.

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