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CONJUNCTIVITIS

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ABSTRACT

Conjunctivitis, commonly known as pink eye, is an inflammation of the conjunctiva, the clear membrane that lines the eyelid and covers the white part of the eye also known as sclera . When the small blood vessels in the conjunctiva become irritated and swollen, they are more noticeable, giving the eyes a reddish or pink appearance. Pink eye is usually caused by a viral infection, but it can also result from a bacterial infection, an allergic reaction, or— in infants— an incompletely opened tear duct.

Although pink eye can be uncomfortable, it rarely impacts vision. Treatments are available to help relieve discomfort. Since pink eye can be contagious, early diagnosis and taking precautions can help prevent its spread.

I. INTRODUCTION

Conjunctivitis, also referred to as pink eye or Madras eye, is an inflammation of the conjunctiva, which is the outermost layer of the sclera (white part of the eye) and the inner surface of the eyelid. This condition typically leads to conjunctival erythema, making the eye appear pink or red, and may be accompanied by symptoms such as ocular discomfort, burning sensation, foreign body sensation, or pruritus. Affected eyes may exhibit increased lacrimation and may adhere upon awakening due to discharge accumulation. Conjunctival edema is also possible, and pruritus is more commonly observed in allergic conjunctivitis. Conjunctivitis can be unilateral or bilateral and was initially identified in Madras.In adults, viral pathogens are the most prevalent infectious causes of conjunctivitis, whereas in children, bacterial pathogens are more common. Viral conjunctivitis often presents with symptoms associated with an upper respiratory tract infection, such as those seen in the common cold. Both viral and bacterial conjunctivitis are highly transmissible. Allergic reactions to environmental allergens, including pollen or animal dander, are also frequent causes. Diagnosis is typically clinical, based on presenting signs and symptoms, although occasionally, discharge samples may be cultured for identification.

Preventive measures include proper hand hygiene. Treatment varies according to the etiology. Most viral conjunctivitis cases are self-limiting and do not require specific intervention. Bacterial conjunctivitis often resolves spontaneously; however, antibiotic therapy can expedite recovery. Specific populations, such as contact lens wearers and patients with infections due to (Neisseria gonorrhoeae) or (Chlamydia trachomatis) necessitate antibiotic treatment. For allergic conjunctivitis, antihistamines or mast cell stabilizer drops may be effective.

In the United States, acute conjunctivitis affects approximately 4 to 7 million people annually, with most cases resolving within one to two weeks. Further evaluation and treatment are warranted in cases of visual impairment, severe pain, photophobia, suspected herpetic infection, or symptoms persisting beyond one week. Neonatal conjunctivitis, presenting in newborns, may also require targeted treatment.

II. EPIDEMIOLOGY

Conjunctivitis is the most prevalent ocular condition. The incidence of this condition is influenced by its etiology, which varies with age and seasonal factors. Acute conjunctivitis is most commonly observed in infants, school-aged children, and the elderly. Among the infectious types, viral conjunctivitis is the leading cause.

It is estimated that acute conjunctivitis affects approximately 8 million individuals annually in the United States.

Seasonal patterns have been identified in the prevalence of various forms of conjunctivitis. In the northern hemisphere, bacterial conjunctivitis typically peaks from December to April, while viral conjunctivitis is most common during the summer months. Allergic conjunctivitis shows higher prevalence rates in spring and summer.

III. ETIOLOGY

Infective conjunctivitis is primarily attributed to viral infections, with bacterial infections, allergies, irritants, and dryness also being significant causes. Both viral and bacterial conjunctivitis are contagious, commonly

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spreading through direct contact with infected individuals or contaminated objects, water, or surfaces. Contamination via fingers touching the eye is a frequent transmission route. Bacteria may reach the conjunctiva from eyelid margins, surrounding skin, the nasopharynx, infected eye drops or contact lenses, genital areas, or the bloodstream. Approximately 70% to 85% of viral conjunctivitis cases are caused by human adenovirus.

1. Viral Conjunctivitis

Adenoviruses are the most prevalent causative agents of viral conjunctivitis (adenoviral keratoconjunctivitis). Herpetic keratoconjunctivitis, caused by herpes simplex virus, can be severe and requires antiviral treatment with acyclovir. Acute hemorrhagic conjunctivitis, a highly contagious disease, is caused by (enterovirus 70) or(coxsackievirus A24). First documented in Ghana in 1969, it has since led to global epidemics.

2. Bacterial Conjunctivitis

The most common pathogens responsible for acute bacterial conjunctivitis are *Staphylococcus aureus*, *Streptococcus pneumoniae*, and *Haemophilus influenzae*. Although rare, hyperacute bacterial conjunctivitis is usually due to *Neisseria gonorrhoeae* or *Neisseria meningitidis*. Chronic bacterial conjunctivitis, defined as lasting more than three weeks, is often caused by *S. aureus*, *Moraxella lacunata*, or Gram-negative enteric flora.

3. Allergic Conjunctivitis

Allergens, including pollen, perfumes, cosmetics, smoke, dust mites, Balsam of Peru, and certain eye drops, can induce conjunctivitis. Allergic conjunctivitis, the most prevalent form, affects 20 % to 45% of the population and accounts for a significant portion of eye-related primary care visits. It often occurs seasonally in spring and summer or may persist year-round.

Other Causes

- (Vision Syndrome): Eye strain from prolonged screen exposure can exacerbate dryness and irritation.

- (Dry Eye Syndrome): A chronic condition often linked to conjunctival inflammation.

- (Reactive Arthritis) Conjunctivitis is part of a triad in reactive arthritis, associated with HLA-B27 and possibly triggered by autoimmune cross-reactivity following bacterial infections.

-Autoimmune Disease (e.g., Relapsing Polychondritis)**: Conjunctivitis may be linked to autoimmune conditions like relapsing polychondritis.

IV. HISTORY

In 1953, Rowe et al. first isolated an adenovirus, followed by Jawetz et al. who published findings on epidemic keratoconjunctivitis in 1955. In India, the term "Madras eye" colloquially refers to this condition.

Outbreak in Pakistan

In September 2023, a notable outbreak of conjunctivitis occurred in Pakistan, initially identified in Karachi before rapidly disseminating to Lahore, Rawalpindi, and Islamabad. By the end of the month, over 85,132 cases had been documented in Punjab alone. The swift transmission of the infection prompted the temporary closure of schools across the region, marking one of the largest epidemics of conjunctivitis in the country's recent history.

V. PREVENTION

The best way to prevent infection is through proper hygiene, particularly by refraining from rubbing the eyes with contaminated hands. Vaccination against certain pathogens like Haemophilus influenzae, pneumococcus, and Neisseria meningitidis is also effective.

Povidone-iodine eye solution has been shown to prevent neonatal conjunctivitis and is increasingly used worldwide due to its affordability.

VI. DIFFERENTIAL DIAGNOSIS

Differential diagnosis for conjunctivitis includes various conditions that can present with similar symptoms. Here are some key conditions to consider:

1. Allergic Conjunctivitis

- Caused by allergens (e.g., pollen, pet dander).

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- Symptoms: Itching, redness, and watery discharge; often associated with other allergic symptoms like sneezing or nasal congestion.

2. Bacterial Conjunctivitis

- Caused by bacteria (e.g., Staphylococcus, Streptococcus, Haemophilus).

- Symptoms: Redness, purulent discharge, crusting of eyelids, often unilateral.

3. Viral Conjunctivitis

- Often associated with viral infections (e.g., adenovirus, herpes simplex virus).

- Symptoms: Redness, watery discharge, and often preceded by respiratory symptoms; may be bilateral.

4. Chemical Conjunctivitis

- Resulting from exposure to irritants (e.g., chlorine, smoke, chemicals).

- Symptoms: Redness, burning sensation, tearing; may cause corneal damage if severe.

5. Subconjunctival Hemorrhage

- Bleeding under the conjunctiva.

- Symptoms: A bright red patch on the white of the eye; usually painless and self-resolving.

6. Uveitis

- Inflammation of the uveal tract, which may include conjunctival involvement.

- Symptoms: Redness, pain, photophobia, and vision changes.

7. Episcleritis/Scleritis

- flammation of the episclera or sclera.

- Symptoms: Redness, pain, and sensitivity to light; may have deeper, more diffuse redness than conjunctivitis.

8. Blepharitis

- Inflammation of the eyelid margins.

- Symptoms: Red, swollen eyelids, crusting, and irritation; may lead to conjunctival involvement.

9. Dry Eye Syndrome

- Insufficient tear production or poor tear quality.

- Symptoms: Redness, irritation, burning sensation; may mimic conjunctivitis but usually associated with dry sensation.

10. Corneal Abrasion

- A scratch on the cornea that can cause irritation and redness.

- Symptoms: Pain, tearing, photophobia, and possible discharge.

VII. CONCLUSION

When evaluating a patient with conjunctivitis, it is essential to consider the history, onset, associated symptoms, and physical examination findings to narrow down the differential diagnosis effectively.

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