

VOLUME 10 ISSUE 2 2024

ISSN 2454 – 3055



**INTERNATIONAL
JOURNAL OF
ZOOLOGICAL
INVESTIGATIONS**

***Forum for Biological and
Environmental Sciences***

Published by Saran Publications, India



Viral Conjunctivitis and its Ocular Complications

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Received: 20th February, 2024; **Accepted:** 22nd October, 2024; **Published online:** 1st December, 2024

<https://doi.org/10.33745/ijzi.2024.v10i02.115>

Abstract: Avian and human influenza A viruses alike have shown a capacity to use the eye as a portal of entry and cause ocular disease in human beings. However, whereas influenza viruses generally represent a respiratory pathogen and only occasionally cause ocular complications, the H7 virus subtype stands alone in possessing an ocular tropism. Clarifying what confers such non-respiratory tropism to a respiratory virus will permit a greater ability to identify, treat, and prevent zoonotic human infection following ocular exposure to influenza viruses; especially those within the H7 subtype, which continue to cause avian epidemics in many continents.

Conjunctivitis is the inflammation of the conjunctiva and has 4 main causes- viruses, bacteria, allergens, and irritants. Among these, bacterial conjunctivitis is most common and is contagious, especially when the ophthalmologist is working with the infected person, and that person spreads the same to the other patient.

Keywords: Dental auxiliaries, Eye flu, Dentists; Eye allergy, Eye influenza, Pinkeye

Citation: Aarthi K., Praveena Devi CH. B., Anjali M., Sai Sharanya P., Akhila V. and Maheshwari B.: Viral conjunctivitis and its ocular complications. Intern. J. Zool. Invest. 10(2): 1177-1183, 2024.

<https://doi.org/10.33745/ijzi.2024.v10i02.115>



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Introduction

Conjunctivitis is the inflammation of the conjunctiva and has 4 main causes- viruses, bacteria, allergens, and irritants. Of these, the acute infective causes (viruses and bacteria) are the most frequently encountered ocular disorders in primary care. Clinically, it is difficult to distinguish bacterial from viral conjunctivitis.

This eye problem arises by viruses and can make the eyes red, itchy, and watery. It can also

lead to a sticky discharge and make eyes feel uncomfortable. It is contagious, which means this disease can pass from person to person easily. The person might have it by touching the eyes after touching surfaces or objects that have the virus on them, or by lose contact with someone who has this eye problem (Visscher *et al.*, 2009).

There is great diversity among influenza A viruses associated with human infection. Human

influenza viruses are responsible for annual epidemics and infrequent pandemics, leading to a high burden of disease worldwide each year. Zoonotic influenza viruses have repeatedly crossed the species barrier, causing human disease that ranges from subclinical to life-threatening. Although these influenza viruses generally lack the capacity for sustained human-to-human transmission, the absence of pre-existing immunity in human populations to these viruses and the ability to cause severe human illness none of the less underscore their pandemic potential. The high infectivity of influenza viruses, and capacity for viruses to remain suspended in the air for sustained distance, further illustrates the constant public health threat posed by this pathogen.

This flu is usually the result of viral infection. The most common viruses responsible for conjunctivitis include adenoviruses, enteroviruses, and herpes simplex viruses. These can spread easily via direct contact, respiratory droplets or contaminated objects - though certain risk factors such as overcrowded environments, poor hygiene practices and compromised immune systems may increase its transmission risk further. In most cases, eye flu is not dangerous and can be easily treated with proper care. There are over-the-counter available eye drops and anti-bacterial medications that can be taken with appropriate dosage for eye flu treatment. However, if left untreated, severe cases of bacterial conjunctivitis may lead to complications that can affect.

What is eye flu?

Eye flu or viral conjunctivitis, is an infection that affects the eyes. This eye problem arises by viruses and can make the eyes red, itchy, and watery. It can also lead to a sticky discharge and make eyes feel uncomfortable. It is contagious, which means this disease can pass from person to person easily.

This disease is called by two different names: Viral conjunctivitis and Eye Flu. This disease causes redness, itching, and irritation of the eyes. This disease occurs especially in the monsoon

season when viruses and bacteria can easily attack the eyes. Eye irritation can also be caused using unclean contact lenses, glasses, or towels, as well as by the harsh chemicals included in some eye drops and chemicals. Extremely contagious, eye flu causes painful conjunctival swelling. This disease especially affects children in the rainy season, that is why safety precautions are necessary for the kids.

Eye Flu vs Conjunctivitis:

While eye flu is often used interchangeably with conjunctivitis, conjunctivitis is not just caused by flu. The four main causes of conjunctivitis include viruses, bacteria, allergens, and irritants. Eye flu most often refers to viral conjunctivitis, although it can easily be confused with the other types as well.

How to differentiate between an eye infection and flu:

An eye infection is a disease of the eye that is because of a microorganism like a bacterium, a virus or a fungus. The most common eye infection is pink eye (conjunctivitis). Viruses cause most cases of pink eye, but bacteria can cause pink eye, too. Viral infections can not be treated with antibiotics (Fig. 1).

Eye flu known as pink eye, is an inflammation of the conjunctiva - the transparent membrane that lines the eyelid and covers the white part of the eye. Generally, Eye Flu is diagnosed in monsoon season. It can be caused by viral or bacterial infections, allergies, or other irritants.

How eye flu or conjunctivitis spreads?

Conjunctivitis: It is an inflammation of the conjunctiva, which is the clear tissue that covers the white part of the eye and lines the inside of the eyelids. It can be caused by various factors, including viral, bacterial, and allergic reactions. The spread of conjunctivitis (Fig. 2) depends on its underlying cause:

Viral Conjunctivitis: This is the most common form of pink eye and is often caused by the same viruses that lead to the common cold. Can spread



Fig. 1: Symptoms of Viral Conjunctivitis.



Fig. 2: Pink Coloration in the Viral Disease.

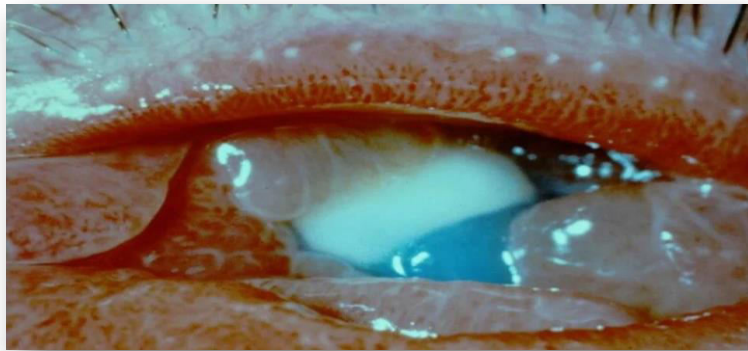


Fig. 3: Infected Eye and its Inflammation.

through direct contact with infected eye secretions or respiratory droplets from a cough or sneeze. It is also possible to contract viral conjunctivitis by touching surfaces or objects that have been contaminated with the virus and then touching the eyes. It can spread easily through contact with respiratory droplets from an infected person or by touching surfaces contaminated with the virus and then touching the eyes. This type of flu in eyes is highly contagious and tends to affect both eyes simultaneously (Fig. 3).

Bacterial Conjunctivitis: Bacterial infections can also cause conjunctivitis. It can spread through

direct contact with infected eye secretions or through contaminated hands, towels, or other items (Fig. 4).

Allergic Conjunctivitis: This type of conjunctivitis is not contagious and is caused by an allergic reaction to substances like pollen, pet dander, or dust mites. It is not spread from person to person.

Is Eye Flu Dangerous?

In most cases, eye flu is not dangerous and can be easily treated with proper care. There are over-the-counter available eye drops and anti-bacterial medications that can be taken with appropriate



Fig. 4: Bacterial Conjunctivitis and Symptoms.



Fig. 5: Eye Pain due to Infalmmation.

dosage for eye flu treatment. However, if left untreated, severe cases of bacterial conjunctivitis may lead to complications that can affect vision.

Is it okay to wear contact lenses if you have pinkeye:

Avoid wearing contacts if you have pink eye. Using the same pair of contacts can re-infect you after pink eye recovery. Contact lenses rest on the surface of your eye. They interact with the conjunctiva every time you blink, including when your eye is irritated and inflamed from pink eye. This interaction can spread the infection. Knowing how to clean and wear your contacts properly is important for maintaining good eye health.

How long should I wait to wear contacts after pink eye?

Keep the contact lenses out and use regular eyeglasses until the infection and any eye irritation are completely resolved. If you decided to wear contact lenses then ask to professional healthcare at the time of pinkeye (Belser *et al.*, 2018).

Types of eye flu:

Viral Infections

Viral conjunctivitis is one of the most common eye flu causes. The primary eye flu reason for viral conjunctivitis is usually triggered by adenoviruses, which are the same viruses responsible for the common cold and upper respiratory infections. Viral conjunctivitis can spread easily through contact with respiratory droplets from an infected person or by touching surfaces contaminated with the virus and then touching the eyes. This type of flu in eyes is highly contagious and tends to affect both eyes simultaneously.

Bacterial Infections

Most bacterial conjunctivitis are self-limiting, although topical antibiotics are recommended because they can shorten the duration of the disease and prevent the spread of infection. Broad-spectrum antibiotics are generally used empirically as first-line therapy for bacterial conjunctivitis. Topical as opposed to oral



Fig. 6: Chemical Conjunctivitis.



Fig. 7: Watery Eyes.

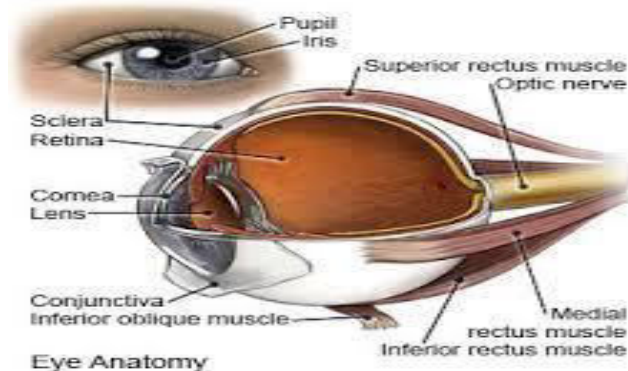


Fig. 8: Anatomical changes during eye flu.

antibiotics are recommended to deliver high levels of the drug directly to the site of infection, exceeding what is normally achieved in body tissues by oral or parenteral routes. Therefore, the antibiotic action of the individual drug enhanced.

Allergic conjunctivitis:

Chemical Conjunctivitis:

Chemical conjunctivitis occurs when the conjunctiva comes into contact with irritants or chemicals, such as smoke, fumes, chlorine in swimming pools, or harsh cleaning products. This type of flu in eyes is not infectious but can cause redness, irritation, and discomfort in the eyes.

Flushing the eye with running water must be done immediately to remove the toxic chemical or liquid. Mild pink eye can be caused by the chlorine in swimming pools. Chemical (alkali and acid) injury of the conjunctiva and cornea is a true ocular emergency and requires immediate intervention. Chemical injuries to the eye can produce extensive damage to the ocular surface and anterior segment leading to visual impairment and disfigurement. Early recognition and treatment ensures the best possible outcome for this potentially blinding condition (Hashmi *et al.*, 2024)

Symptoms and Causes:

An infected eye may look or feel different than usual. Early signs and symptoms of an eye infection may include:

(i) Eye Pain: Eye pain can affect one or both eyes. Eye pain may be due to things like injuries, inflammation and infections. Treatment depends on the cause of eye pain and may include things like eye drops, shielding eyes or having surgery (Fig. 5).

(ii) Red Eye: Eyes can become red because of irritation or injury. Eye redness can be treated with home remedies, but others require medical help. If there is pain, fever, blurred vision, discharge or other symptoms along with red eye, an eye care provider can treat you (Fig. 6).

(iii) Epiphora (Watery Eyes): Tears lubricate and protect the eye. But if there is much tears or if something stops them from draining properly then it is epiphora, the medical definition of watery eyes (Fig. 7).

(iv) Blurred Vision: Blurred vision can happen because of being tired, or it can be a symptom of another condition. Treatment depends on the cause. If blurred vision comes on suddenly, seek medical help immediately.

Prevention and Hygiene Practices:

Soap and Water: It should be used regularly to clean hands for at least 20 sec prior to touching any facial features or eyes, including touching or rubbing them. Touching eyes directly may introduce viruses and bacteria. If there is conjunctivitis, wash the hands well before and after cleansing the infected eye or applying eye drops or ointment to it.

Tissues or Elbow: When coughing or sneezing, using tissue or coughing into your elbow will help prevent respiratory droplets from spreading further. Keep away the elbow while eye gets irritant which can spread others.

Avoid Sharing Personal Items: Never share towels, cosmetics or any other personal items which might come into contact with eyes with anyone.

Clean and Disinfect Surfaces: On an ongoing basis,

be sure to disinfect surfaces that come into regular contact, such as door knobs, counter tops and electronic devices.

Practice Good Contact Lens Hygiene: If you wear contact lenses, be sure to follow proper hygiene practices, such as disinfecting and replacing them according to schedule.

Effective Treatment Options:

Warm or cold Compresses: Applying a clean, warm compress or ice packs to closed eyes can help soothe discomfort and reduce swelling. Use a soft, lint-free cloth soaked in warm water and gently places it over closed eyelids for a few minute

Cold Compress in some cases can relieve symptoms of conjunctivitis. Use a clean cloth or icepack wrapped in a towel and apply it to the affected eye for 5-10 min.

Artificial Tears: Over-the-counter artificial tears can help provide relief from dryness and irritation of the eyes.

Cleanse the Eye Area: Use a clean damp cloth to gently clean the eye to remove any discharge from the eye. This can also help reduce the risk of spreading the infection.

Conjunctivitis, or eye flu, is an inflammation of the eye that can be caused by viruses, bacteria, allergies, or irritants. The anatomical changes are shown in Figure 8. Pinkeye symptoms include redness, itching, and discharge from the eye. While some home care remedies can provide relief, it is important to seek medical attention if symptoms persist or worsen. Practicing good hygiene and eye protection can help prevent the spread of conjunctivitis (Dhavan *et al.*, 2023).

Home Remedies for Eye Flu:

To reduce eye flu at home we should apply some natural remedies such as:

- **Salt water Eye Rinse:** To apply salt water for eye infection, mix a teaspoon of salt in a cup of warm water and use it to rinse eyes gently. The saline solution can help cleanse and soothe the infected area.

- Honey Compress: A potent natural remedy for eye problems, honey has antimicrobial properties that can aid in healing. Create a mixture of honey and warm water, soak a clean cloth in it, and place it as a compress on closed eyes.
- Warm Compress for Sore Eyes: The fastest way to cure sore eyes is using a warm compress. Soak a clean cloth in warm water, wring out excess water, and gently place it on eyes for relief (Solano *et al.*, 2024).

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