

Conjunctivitis: A Guide of Etiology, Morphology, Care, and Prevention

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Conjunctivitis is a highly contagious infection caused by bacteria, viruses or allergies. Seasonal peaks are seen for various types of conjunctivitis. Effective infection management includes isolation, thorough cleaning and proper hygiene. Performing hand hygiene frequently is of utmost importance to prevent cross-infection and self-infection.

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Introduction

Conjunctivitis: Etiology

Conjunctivitis, commonly known as pink eye,¹ is inflammation of the eyeball's outer membrane and the eyelid's inner surface.² It is very common, reporting more than 10 million cases per year in India while about 3 to 6 million cases per year in the United States.^{3,4} Conjunctivitis imposes economic and social burdens. The treatment cost of bacterial conjunctivitis was estimated in millions of dollars per year in the United States, i.e., \$377 million to \$857 million⁴ and results in approximately 1% of total primary care visits in the country. Most of the infected persons with acute conjunctivitis (70%) show up in the primary care and urgent care departments.⁴

Conjunctivitis is extremely contagious and can be spread rapidly by contact with eye secretions from infected persons. It can be caused by either allergies or bacterial or viral infections. Viral is the most common infectious cause followed by bacterial^{4,5} Adenoviruses cause 65% to 90% of viral conjunctivitis.⁴ The viral infection is commonly seen in adults and is associated with upper respiratory tract infections, a common cold, or a sore throat.³ Meanwhile, bacterial causes are more common in children.⁴ Conjunctivitis in a newborn is called neonatal conjunctivitis.³

In the northern hemisphere, seasonal trends are seen with different forms of conjunctivitis. Bacterial conjunctivitis reaches the peak during December to April, while viral conjunctivitis peaks in the summer months, and allergic conjunctivitis is more prevalent throughout the spring and summer seasons.⁶ The infection is usually unilateral, to begin with, but in the absence of appropriate precautions, easily spreads to the other eye.

Morphology: Types of conjunctivitis

Viral conjunctivitis

Viral conjunctivitis manifests as a fine, diffuse congestion of the conjunctiva and numerous lymphoid follicles on the tarsal conjunctiva. Typically, it is self-limiting with cases getting better in one or two weeks.^{3,4}

Allergic conjunctivitis

Allergic conjunctivitis is inflammation of the conjunctiva due to allergy.⁷ The allergens may differ among the patients such as, the type of food or pollen. Various cascades of the inflammatory process take place which involves the release of histamine, mast cells, and other active inflammatory substances through dilated peripheral blood vessels causing symptoms like redness, chemosis, and excessive tear formation leading to watering, photophobia, and itching.

Bacterial conjunctivitis

Bacterial conjunctivitis causes the rapid onset of conjunctival redness, eyelid swelling, foreign body

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sensation, and sticky discharge Usually, one eye gets affected first followed by another after 3-5 days. Diagnostic signs of bacterial conjunctivitis involve marked grittiness and foreign body sensation to the extent that the patient is unable to open the eye. The characteristic of bacterial conjunctivitis is a sticky discharge which can either be greyish or yellowish causing the eyelids to stick together followed by deposition of severe crusting on and around the eye after waking up. The *Staphylococcus*, *Streptococcus*,⁸ and *Haemophilus* species are the most common bacteria responsible for bacterial conjunctivitis.⁹

Symptoms

Symptoms of pink eye (conjunctivitis) include- Redness, photophobia, blurring of vision, sticky discharge and crusting over eyelashes and eyelids, foreign body sensation, grittiness, and eyelid swelling.

Management and Prevention

In case of bacterial or viral conjunctivitis, staying at home for the first 24-48 hours after starting the treatment is recommended. Following general hygiene and eye care practices will help to prevent the spread of the infection:

- Personal items such as makeup, towels, contact lenses, or cups should not be shared.
- Bed sheets, pillow covers, towels, and cloths must be washed in hot water with detergent.
- Avoid wearing eye makeup until the infection is completely gone. Throw old/ expired eye makeup and makeup that was used just before the start of the infection.
- Avoid wearing contact lenses. Wear glasses and clean them frequently.
- The disposable contact lenses must not be used again. Clean the lenses and all eyewear cases thoroughly using a sterile solution. Wash your hands before inserting or removing the lenses.
- The eye drops of an infected eye should not be used for the non-infected eye.
- Do not touch or rub the infected eye (s).
- Wash your hands after applying an eye drop or ointment to the infected eye.
- Wash your hands repeatedly with soap and water.
- Wash any discharge from the eyes using a fresh cotton ball and lukewarm water.
- Pack the contaminated cotton ball in a sealable plastic bag and throw it in a separate trash container to prevent the spread of the infection. Place the trash container separate from your regular household waste and wash your hands with soap and water.

Hand Hygiene

Performing hand hygiene with soap and water is of utmost importance during conjunctivitis infection. Due to the highly contagious nature of the infection, it can easily spread through contact with contaminated hands and surfaces.¹⁰ Some of the main reasons for the recommendation of hand hygiene are given below-

Prevention of spread of infection

When an infected person touches their eyes the causing pathogen transfers to their hands subsequently touching any object or while shaking hands these pathogens can transfer to two other persons, leading to the rapid spread of conjunctivitis. Proper hand hygiene can break this transmission chain.

Reduce self-infection

Practicing good hand hygiene is also essential to prevent self-infection in a similar way, as explained above.

Preventing complications

particularly in the case of bacterial conjunctivitis, repeated self-infection can lead to severe eye infections such as corneal ulcers and the absence of hand hygiene.

Minimizing cross-contamination

Shared objects such as computer keyboards, smartphones, and writing materials can be contaminated by hands; regular hand washing scans help minimize search cross-contamination.

Overall Health Support

The advantages of hand hygiene are not limited to the management of conjunctivitis. However, it also supports overall health proper hand hygiene reduces the risk of overall illness and supports the body in fighting infections. It is recommended to wash your hands frequently with soap and water and scrub them for at least 20 to 30 seconds with foam, especially before touching your eyes, face, mouth, and nose.

In conclusion, maintaining hand hygiene, especially using soap and water, is the most crucial step in breaking the chain of the spread of conjunctivitis infection and preventing self-infection. It is noteworthy that practicing hand hygiene is not only beneficial during conjunctivitis management but also advantageous for overall well-being.

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