

## Deciphering conjunctivitis

This is in contrast to HSV dendrites, which shows terminal bulbs when viewed by slit lamp examination after fluorescein staining.<sup>2</sup> Supportive treatment such as cool compresses and preservative-free lubrication eye drops help improve symptomatic relief, and topical antibiotics may help to prevent secondary bacterial infection.<sup>2,9</sup> An ophthalmologist should be consulted regarding systemic or topical antiviral agents and steroids treatment as occasionally indicated depending on the ocular manifestations of HZO.<sup>9</sup> Similarly, if the patient with HZO activation should have any ocular involvement, ophthalmologic follow-up should occur within 24 hours.<sup>9</sup>

### Bacterial conjunctivitis

The most common causes of bacterial conjunctivitis are gram-positive organisms such as *Streptococcus pneumoniae* and *Staphylococcus aureus*, and gram-negative organisms such as *Haemophilus influenzae*.<sup>4</sup> *Streptococcus pneumoniae* and *Staphylococcus aureus* infections occur more frequently in children; and *Haemophilus influenzae* afflicts mostly adults.<sup>1</sup> Bacterial conjunctivitis is often associated with tearing and ocular irritation and the infection usually spreads to the contralateral eye within 48 hours.<sup>4</sup> The patient may complain of morning crusting and difficulty opening the eyelids due to a discharge that causes matting of the lids and lashes.<sup>1</sup> The pattern of the red eye injection is diffuse but often more pronounced at the fornices.<sup>4</sup>



**Figure 2:** Bacterial conjunctivitis with matting of the eyelashes caused by the mucoid and thick discharge

Bacterial conjunctivitis responds well to topical ophthalmic broad-spectrum antibiotics such as erythromycin and bacitracin/polymyxin, and lowers the risk of sight-threatening complications such as ulceration.<sup>2</sup> Ointment, have an increased pre-ocular residence time and are less irritating, works best for children who can also tolerate the associated blurred vision well,<sup>2</sup> while eye drops are recommended for adolescents and adults due to their ease of application.<sup>1</sup> For those patients who present with an infectious corneal ulcer greater than 1 mm or when an unusual organism is suspected, smears and cultures should be performed and intensive antibiotic therapy should be initiated using topical fluoroquinolone, six to eight times per day, and a cycloplegic agent,<sup>2</sup> and followed-up in 1 day.<sup>7</sup>

### Hyperacute bacterial conjunctivitis

Hyperacute bacterial conjunctivitis is a severe, sight-threatening ocular infection that warrants immediate ophthalmic work-up and management.<sup>1</sup> The causative agent for hyperacute conjunctivitis is *Neisseria gonorrhoea* and occurs most commonly in sexually active persons.<sup>2</sup> *Neisseria gonorrhoea* is usually spread from genital-hand-eye contact in the young sexually active population, but neonates can acquire it from the birth canal, usually manifesting 3 to 5 days postpartum with bilateral discharge in neonates.<sup>1</sup> Ocular *Neisseria gonorrhoea* infection is of sudden onset and is characterised by copious amounts of purulent discharge that reforms quickly after wiping away.<sup>1,2</sup> It is not unusual to find marked conjunctival injection and chemosis, lid swelling, globe tenderness through closed lids, and preauricular lymphadenopathy on physical examination.<sup>1,2</sup> Specimens for bacterial cultures should be obtained in patients with hyperacute conjunctivitis.<sup>1</sup>



**Figure 3:** Hyperacute conjunctivitis showing copious amounts of purulent discharge

Treatment includes irrigating the eyes with saline solution and due to large number of patients with *Neisseria gonorrhoea* having concurrent venereal disease, systemic antibiotics directed against *Neisseria gonorrhoea* should be initiated.<sup>1,2</sup> Hyperacute conjunctivitis secondary to *Neisseria gonorrhoea* infection requires urgent referral because it can have sight-threatening outcomes due to ulceration and perforation.<sup>1</sup>

### Chlamydial conjunctivitis

Chlamydiae are organisms which have some characteristics of both viruses and bacteria. Serotypes A through C cause trachoma and serotypes D through K causes inclusion conjunctivitis.<sup>1</sup> Trachoma is a chronic keratoconjunctivitis that is the most common form of preventable blindness in the world and inclusion conjunctivitis is a common, primarily sexually transmitted disease that affects both new-borns and adults.<sup>10</sup> Trachoma infection principally presents with slightly red eyes, ocular discomfort, some discharge and droopy swollen upper eyelids.<sup>1</sup> It is common in areas where there is limited clean water and crowded living conditions and is spread by flies in poor environmental conditions.<sup>1,10</sup> The diagnosis is confirmed by everting the upper eyelid and examining the palpebral conjunctiva for follicles and when at least half of the upper lid conjunctival blood vessels cannot be seen because the conjunctiva is so thickened and inflamed in very active infection (Figure 4). Treatment of trachoma includes topical tetracycline eye ointment, three times a day for six weeks, or azithromycin 20 mg per kg body weight.<sup>1,7</sup>



**Figure 4:** Active chlamydia trachomatis infection

Inclusion conjunctivitis occurs more frequently than ocular *Neisseria gonorrhoea* infection in new-borns, who acquire it in the birth canal and cervix.<sup>1</sup> In adults, inclusion conjunctivitis is most common in young sexually active persons and is transmitted via genital secretions. Clinical features include unilateral or bilateral redness, tearing, conjunctival inflammation, eyelid swelling, foreign body sensation, mucopurulent discharge, and preauricular adenopathy.<sup>1,2</sup>

**INVU.**  
BY SWISS EYEWEAR GROUP

This CPD  
educational  
initiative proudly  
sponsored by  
**INVU**  
Ultra Polarized



Distributed by  
**SDM Eyewear:**  
(011) 334-7020



# Deciphering conjunctivitis



This CPD educational initiative proudly sponsored by INVU Ultra Polarized



Distributed by SDM Eyewear: (011) 334-7020

Laboratory studies are mandatory when inclusion conjunctivitis is suspected due to the possibility of concurrent asymptomatic cervical or urethral chlamydial infection.<sup>1,2</sup> Similarly, a work-up for other sexually transmitted diseases should also be considered because co-infection rates can be high.<sup>1</sup> The sexual disease in the adult is treated by azithromycin, 1 g orally for one dose, doxycycline, 100 mg orally twice daily, or erythromycin, 500 mg orally four times daily for 7 days for the patient and sexual partners.<sup>1,7</sup> The ocular infection associated with inclusion conjunctivitis should be treated with topical erythromycin, tetracycline, or sulfacetamide ointment twice to three times daily for 2 to 3 weeks, with an ophthalmology follow-up in 1 week.<sup>7</sup> Special cultures and stains to assist with treatment regimen may be required in neonatal inclusion conjunctivitis.<sup>1</sup> Systemic antibiotics and topical antibiotics are often used to treat neonatal inclusion conjunctivitis due to its association with otitis media and respiratory and gastrointestinal tract infections.<sup>1</sup>

### Allergic conjunctivitis

The most common types of ocular allergic conditions include seasonal allergic conjunctivitis, perennial allergic conjunctivitis, vernal keratoconjunctivitis, atopic keratoconjunctivitis and contact ocular allergy. Allergic conjunctivitis is the most common form of all ocular allergy disease and is usually associated with atopic diseases such as asthma, eczema, or allergic rhinitis.<sup>11</sup> It involves an IgE-mediated Type 1 hypersensitivity reaction and presents with papillary projections, a watery to stringy mucoid discharge, persistent itching and tearing of the eyes.<sup>11,12</sup> Primary treatment options includes measures to reduce allergen exposure while cold compresses and preservative free ocular lubricants provide symptomatic relief.<sup>14,15</sup> They also promote vasoconstriction to reduce eyelid swelling, chemosis and hyperaemia.<sup>14,15</sup> Antihistamines, vasoconstrictors and mast-cell stabilisers remain the mainstay management of ocular allergy.<sup>14,15</sup> Severe cases of may require corticosteroids or immunotherapy, in consultation with an ophthalmologist.<sup>14,15</sup>



Figure 5: Allergic conjunctivitis showing limbal involvement  
Chemical conjunctivitis

### Chemical conjunctivitis

Substances such as traditional eye remedies, preservatives in eye drops and other irritants can cause chemical reactions that result in conjunctivitis.<sup>1</sup> The clinical presentation may be similar to that seen in other conditions such as viral conjunctivitis.<sup>1</sup> A thorough case history is important to ascertain the nature of the offending agent. The patients should be advised to stop instilling the substance that has caused the reaction and should discard expired eye drops and those that have been open for a month or more.<sup>1,7</sup> Tetracycline eye ointment can be soothing and will prevent secondary bacterial infection.<sup>1,7</sup> Irrigation with water or saline to wash out the substance from the eye should be done for conjunctivitis caused by an irritating substance.<sup>16</sup> However, for conjunctivitis caused by chemicals such as acid or alkaline materials, seeking urgent medical advice with an ophthalmologist should immediately follow the irrigation.<sup>16</sup>

### OTHER CAUSES OF CONJUNCTIVITIS

Conditions such as keratitis, nasolacrimal duct obstruction, occult foreign body, or ocular neoplasm are serious and can cause chronic unilateral conjunctivitis and patients presenting with these conditions require prompt referral to an ophthalmologist.<sup>1</sup> A summary of the key clinical features of the various causes of conjunctivitis are outlined in Table 1.

Cause of conjunctivitis	Unilateral (U) or bilateral (B)	Discharge	Redness	Other clinical features
<b>Viral:</b> Epidemic	B	Watery	Severe	Fever and sore throat
<b>Viral:</b> Herpes	U	Watery	Varies	Vesicles on eyelid
<b>Viral:</b> Zoster	U	Watery	Severe	Hutchinson's sign, HZV dendrites
<b>Bacterial:</b> Non-gonococcal	U or B	Mild purulent	Moderate to severe	None
<b>Bacterial:</b> Gonococcal	B	Severe purulent	Severe	Marked lid swelling, may have corneal ulcer
<b>Chlamydial:</b> Babies	B	Mild purulent	Mild	Lid swelling
<b>Chlamydial:</b> Trachoma	B	Minimal purulent	Minimal	Signs on everted eyelid
<b>Chlamydial:</b> Adults	U or B	Minimal purulent	Minimal	None
<b>Allergy:</b> Acute	B	Severe watery	Minimal	Marked swelling of lid and conjunctiva
<b>Allergy:</b> Chronic	B	Thick and stringy	Minimal	Signs on everted eyelid, discoloration of the eye
<b>Chemical</b>	U or B	Watery/purulent	Varies	May be lid reactions

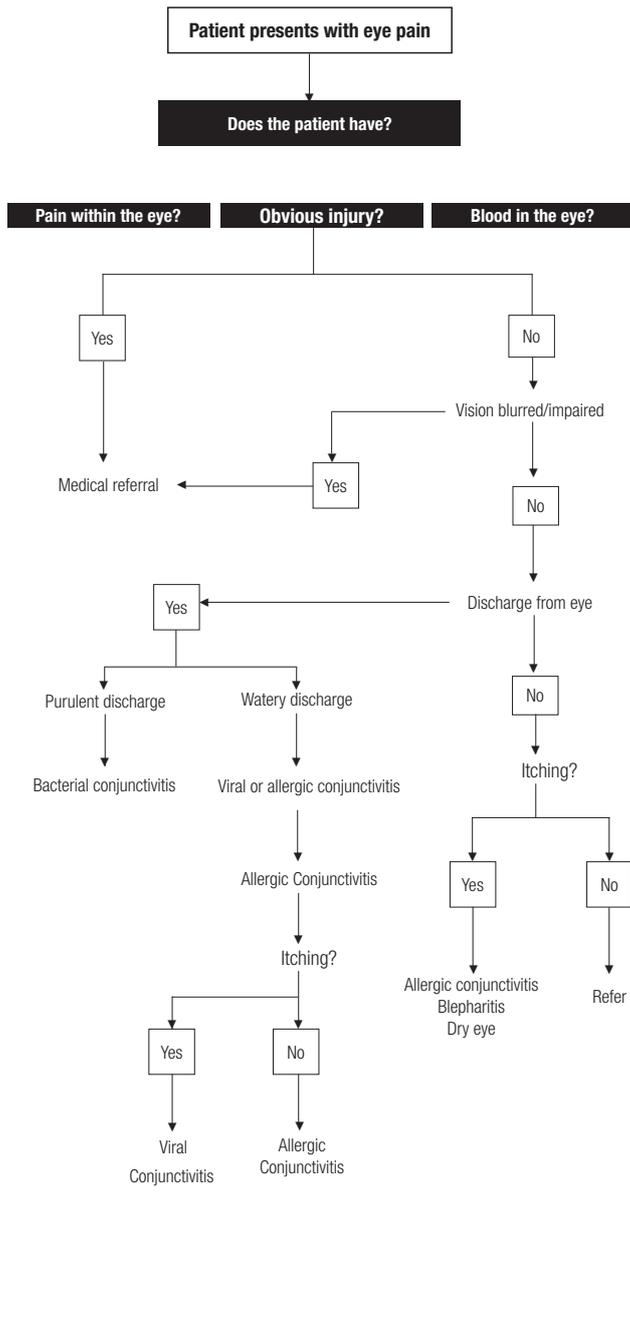
Table 1: Key clinical features of the different causes of conjunctivitis.<sup>17</sup>

### CONCLUSIONS

The hallmark clinical presentation of conjunctivitis varies depending on the exact aetiology and includes swollen eyelids, red conjunctiva and a watery or pussy discharge. Although most causes are benign and self-limiting, those due to gonococcal infections represent serious, sight-threatening conditions and require expeditious ophthalmological follow-up. The approach to conjunctivitis is summarised in Figure 6 on the following page.



# Deciphering conjunctivitis



### Acknowledgements

The author acknowledges Dr Cesarea Sanchez Hernandez and the International Centre for Eye Health for granting permission to use their clinical photographs.

### References

- Morrow GL, Abbott RL. Conjunctivitis. *Am Fam Physician*. 1998;57(4):735-46.
- Mahmood AR, Narang AT. Diagnosis and Management of the Acute Red Eye. *Emerg Med Clin N Am*. 2008;26(1):35-55.
- Hara JH. The red eye: diagnosis and treatment. *Am Fam Physician*. 1996;54(8):2423-2430.
- Roscoe M, Landis T. How to diagnose the acute red eye with confidence. *JAAPA* 2006 2003;19(3):24-30.
- Weber CM, Eichenbaum JW. Acute red eye: differentiating viral conjunctivitis from other, less common causes. *Postgrad Med*. 1997;101(5):185-189.
- Wirbelauer C. Management of the red eye for the primary care physician. *Am J Med*. 2006; 119(4):302-306.
- Kunimoto DY, Kanitkar KD, Makar MS, editors. *The Wills eye manual: office and emergency room diagnosis and treatment of eye disease*. 4th edition. Philadelphia: Lippincott Williams & Wilkins; 2004. p. 61-181.
- Waife B. Herpes Zoster Ophthalmicus in HIV/AIDS. *J Com Eye Health*. 2003 16(47):35-36.
- Shaikh S, Ta CN. Evaluation and management of herpes zoster ophthalmicus. *Am Fam Physician*. 2002;66(9):1723-1730.
- Naidoo K. Poverty and Blindness in Africa. *Clin Exp Optom*. 2007;90(6):415-421.
- Chowdhury B. Allergic conjunctivitis – A review. *DOST*. 2013;19(4):41-47.
- Mantelli F, Lambiasi A, Bonini S. A simple and rapid diagnostic algorithm for the detection of ocular allergic diseases. *Cur Opin Allergy Clin Immunol*. 2009; 9(5):471-476.
- Leonardi A, Battista MC, Gismondi M, Fregons IA, Secchi, AG. Antigen sensitivity evaluated by tear-specific and serum specific IgE, skin tests, and conjunctival and nasal provocation tests in patients with ocular allergic disease. *Eye*. 1993; 7(3):461-464.
- Chigbu DI. The management of allergic eye diseases in primary eye care. *CLAE*. 2009; 32(6):260-272.
- Bielory L. Ocular allergy overview. *Immunol Allergy Clin North Am*. 2008; 28(1):1-23.
- Merle H, Gerard M, Schrage N. Severe ocular burns. *Eur Ophthalmic Rev*. 2011; 5(2):130-133.
- Senaratne T, Gilbert C. Conjunctivitis. *Com Eye Health Journal*. 2005; 18(53):73-75.



This CPD educational initiative proudly sponsored by **INVU Ultra Polarized**



Distributed by **SDM Eyewear: (011) 334-7020**

