

WELCOME

OPHTHALMIC INFECTIONS

BLINDNESS



INTRODUCTION

- There are numerous conditions which can cause eye redness and discomfort, but no pain.
- Any eye condition that is associated with pain, or blurring of vision, warrants an immediate medical attention.
- Few common conditions that give rise to non painful red eyes include conjunctivitis.

CONJUNCTIVITIS

WHAT IS CONJUNCTIVITIS?

- Commonly Referred to as “Pink Eye”
- Conjunctivitis is an inflammation of the conjunctiva
- It is very common among young children particularly those in school and day-care.



Conjunctivitis

COMMON SYMPTOMS

Redness



Stickiness



Grittiness



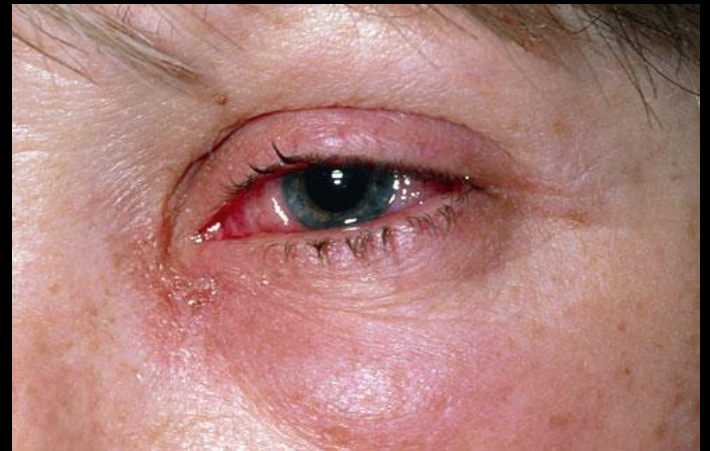
Lacrimation



Sometimes photophobia



- Other possible symptoms include burning sensation and dryness of eye.



TYPES

- Conjunctivitis is of Two types namely:

- Infective

- Non Infective

PREVALANCE OF CONJUNCTIVITIS INDIAN SCENARIO

- In a study, a total 400 cases of eye infection were studied.
- Among them, 250 were conjunctivitis
- The isolation rate was 59.2% in conjunctivitis.

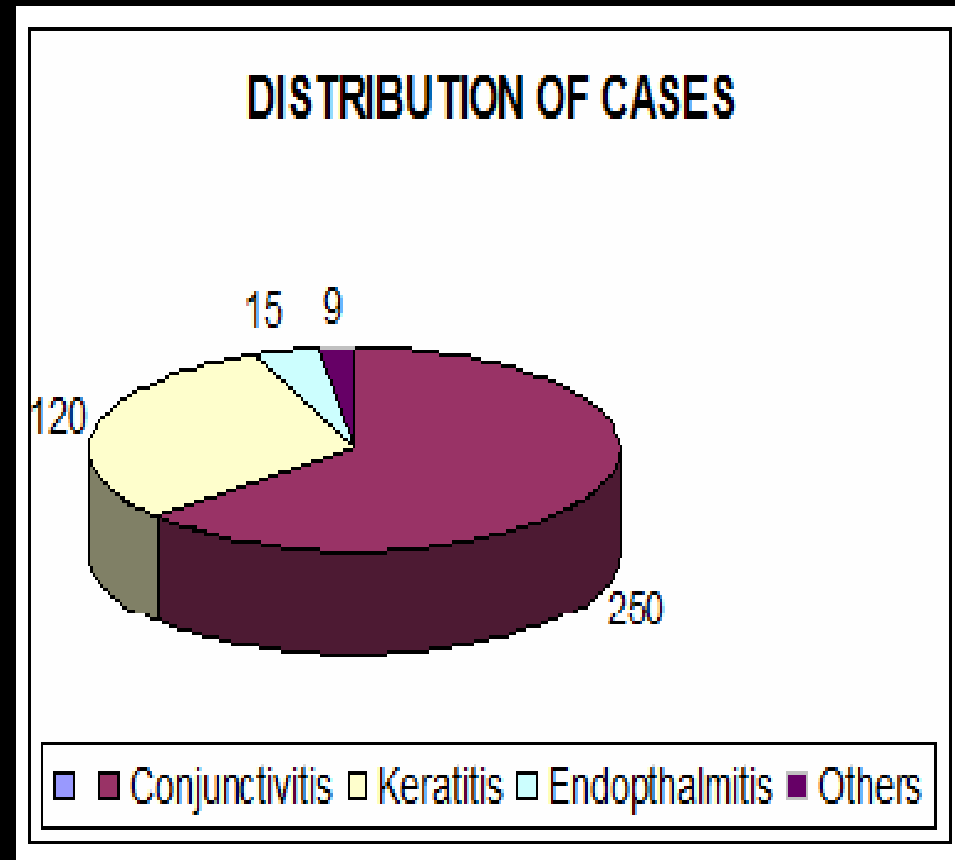


Fig : Showing Distribution of Cases

Prevalance study of ocular infections in school children in Haryana

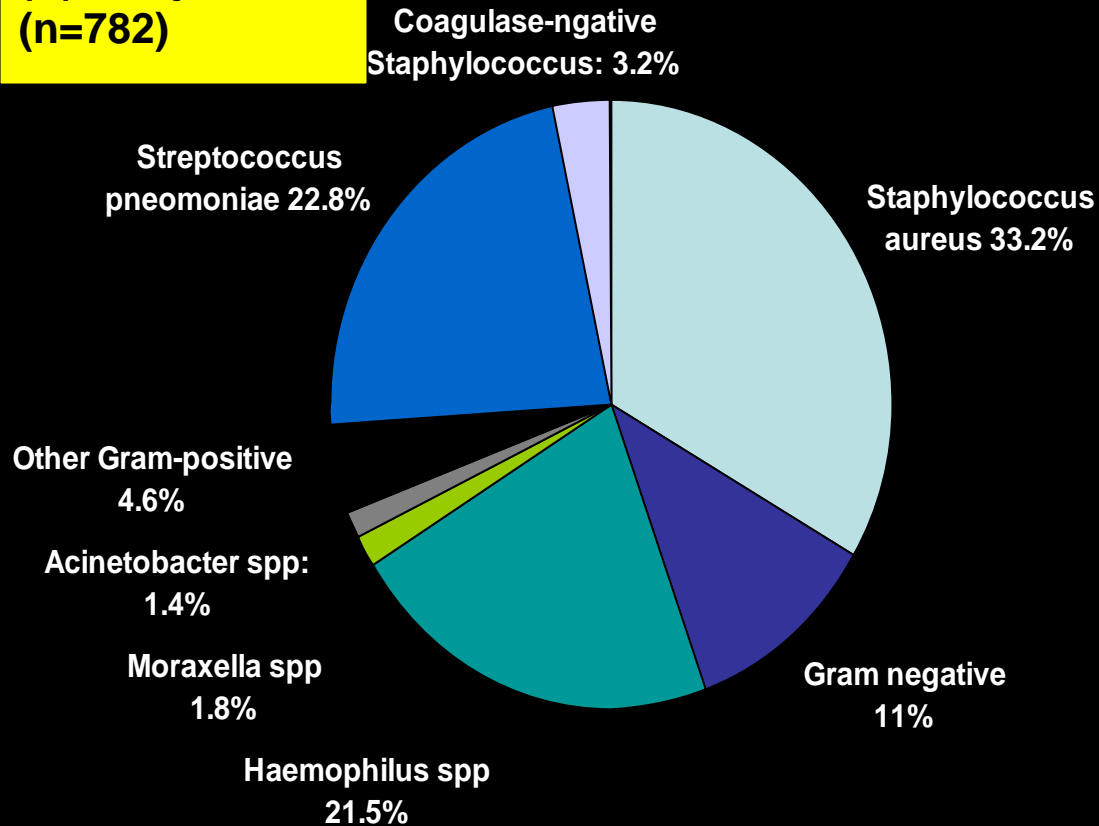
- A total of 1256 students (6-15 yrs) were examined. Out of these 288(22.8%) were found to have ocular infection. Most common infection was conjunctivitis (4.7%).
- Kumar R et al (2004) 2 also observed 4.6% prevalence in urban and rural school children (5-14 yrs) of Delhi.
- Trivedi et al (2006) 4 observed 5.1% prevalence in children (7-15 yrs) of urban and rural areas of Gujarat.

Ocular Infections	Sex		Total [%] n=1265	χ^2 Value (df=1)	p Value
	Boys [%] n=510	Girls [%] n=755			
Squamous Blepharitis	75 [14.7]	81 [10.7]	156 [12.3]	4.491	0.034*
Vernal Conjunctivitis	33 [6.5]	31 [4.1]	64 [5.1]	3.35	>0.05
Conjunctivitis	30 [5.9]	29 [3.8]	59 [4.7]	2.65	>0.10
Stye	4 [0.78]	5 [0.66]	9 [0.7]	0.064	0.80
Total	142 [27.9]	146 [19.3]	288 [22.8]		

Ocular Infections	Age Groups [in years]			Total [%] n=1265 [%]	χ^2 Value (df- 2)	p- Value
	6-10 n=282 [%]	10-13 n=536 [%]	13-15 n=447 [%]			
Squamous Blepharitis	36 [12.8]	62 [11.5]	58 [13]	156 [12.3]	0.496	0.78
Vernal Conjunctivitis	14 [5.0]	30 [5.6]	20 [4.8]	64 [5.1]	0.51	0.50
Conjunctivitis	10 [3.6]	23 [4.3]	26 [5.8]	59 [4.7]	2.13	>0.10
Stye	3 [1.1]	3 [0.6]	3 [0.7]	9 [0.7]	0.690	0.70
Total	63 [22.5]	118 [22]	107 [24.3]	288 [22.8]		

PREVALANCE OF CONJUNCTIVITIS GLOBALLY

**(A) Conjunctivitis
(n=782)**



COMMON CAUSES

- Infectious conjunctivitis accounts for 70% of cases is caused by **Bacteria** (*Staphylococci*, *Streptococci*, *Pneumococci* or *Chlamydia trachomatis*), **Virus**, **Fungi**, **Parasites**.
- Non infective accounts for remaining 30% and is caused by **Allergies**(Pollen or grass), **Irritants**, **Endogenous agents**, **Toxic**(Drug induced or chemicals).

RISK FACTORS

- Conjunctivitis affects people at any age but occur most often between ages 1-25 years.
- Infectious conjunctivitis is **highly contagious**. Family members and people who are in close contact with each other, such as in schools, daycare centers, and summer camps, swimming pools, college dorms, military housing tend to get infected.
- Most often the infection spreads from person to person.
- Children who wear contact lenses, especially extended-wear lenses, may be more prone to developing bacterial conjunctivitis.

- Evaluation of Conjunctival inflammation is done by
- The type of discharge
- The characteristic of conjunctival reactions
- The presence of Lymphadenopathy

1 CONJUNCTIVAL DISCHARGE

CONJUNCTIVAL DISCHARGE

Watery



Mucin



Mucopurulent

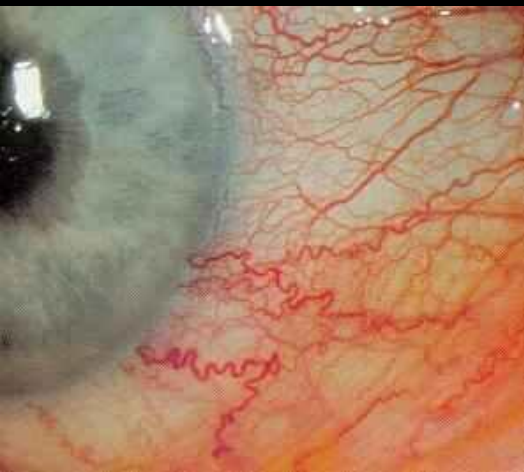


Purulent



2 CONJUNCTIVAL REACTIONS

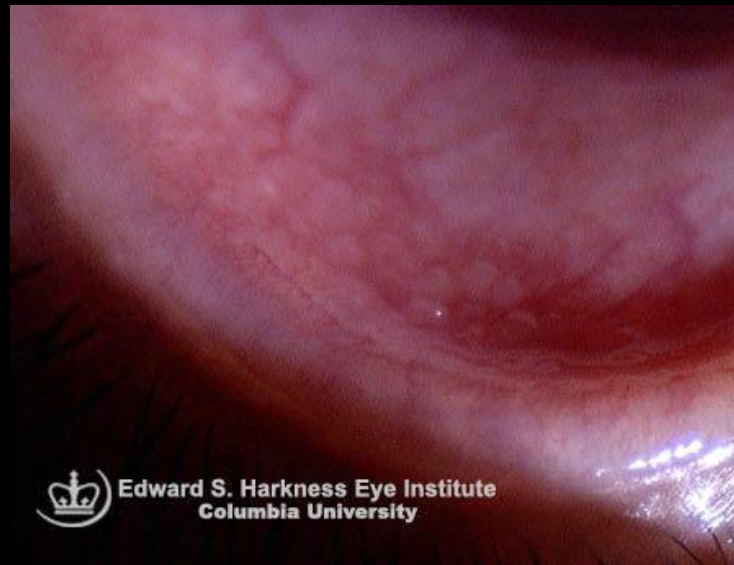
Hyperaemia



Chemosis or oedema



Follicle



Papilla



- Membrane True or Pseudomembrane
- 3 Lymphadenopathy- Disease of Lymph nodes

INFECTIOUS CONJUNCTIVITIS

- Infectious conjunctivitis is caused by either Bacteria or Virus.
- It is contagious
- Infectious conjunctivitis is divided into two broad groups:
- Acute(Resolving in 4 weeks)
- Subacute or Chronic(Of more than 4 weeks duration)

VIRAL CONJUNCTIVITIS

- It is more common in children and adults.
- It mostly affects one eye but can affect other eye within a week.
- It is associated with upper respiratory infections and cold.



- The aetiological agents are:
- Adenovirus (Most common cause)
- Herpes simplex virus (serious form)
- Picornavirus
- Influenza viruses
- Paramyxoviruses

CONTD.....

- Symptoms and Signs:
 - Acute red eye
 - Serous or Clear watery discharge
 - Follicular Pattern
 - Chemosis
 - grittiness, slight irritation and discomfort
 - sometimes photophobia
 - Papillary hypertrophy
 - Preauricular Lymphadenopathy

- The two most common forms of viral conjunctivitis are:

❖ Epidemic
keratoconjunctivitis(EKC) :-

Caused by *Adenovirus* types
18 and 19.

Acute Follicular conjunctivitis
with preauricular adenopathy.



Epidemic keratoconjunctivitis.

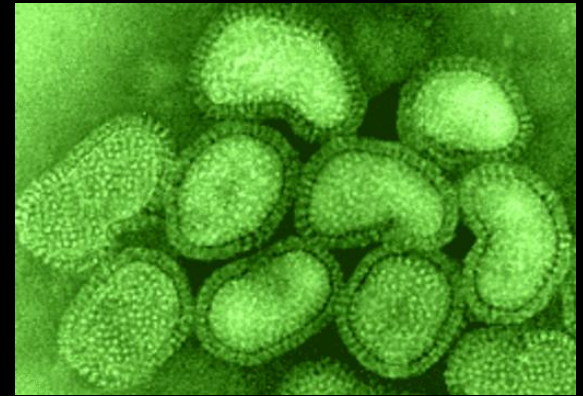
❖ Pharyngoconjunctival fever (PCF):-

Also caused by *Adenovirus* types 3,4 and 7.

Acute Follicular conjunctivitis with fever, pharyngitis.



❖ New castle Conjunctivitis:- Caused by *New castle virus*.



❖ Haemorrhagic Conjunctivitis:- Caused By *Picornavirus* namely *coxsackie* and *enterovirus 70*



❖ Acute Herpetic Conjunctivitis:-
Caused By *Herpes Virus*.

❖ Herpes simplex Conjunctivitis:-
Caused By *Herpes Virus*.

FIGURE 6

Herpetic conjunctivitis



This 2-year-old developed itchy vesicles on the left lower eyelid that later crusted. A viral culture was positive for herpes simplex virus.

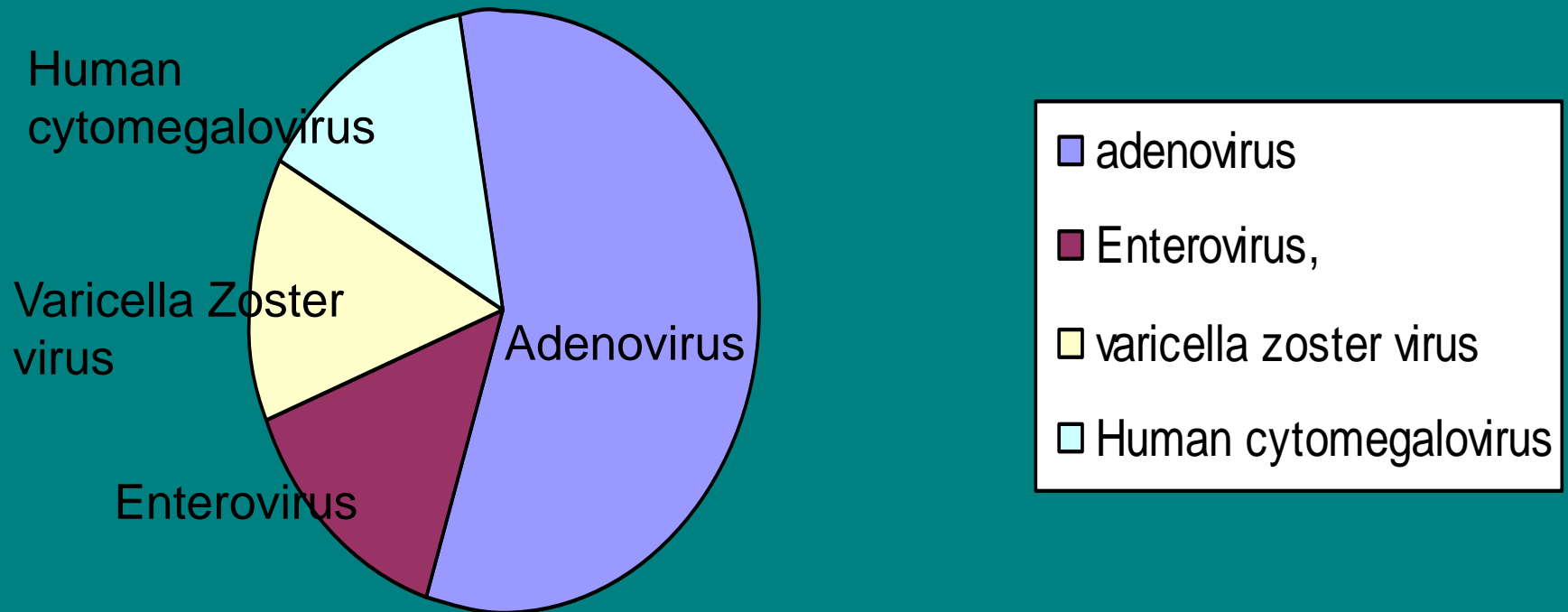
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VIRUS DISTRIBUTION

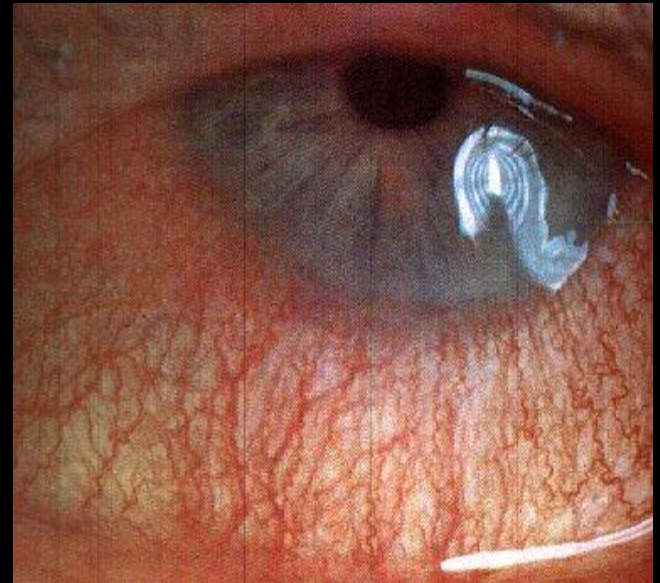
- Out of one thousand nine hundred and sixty-four (1964) cultures:
- Adenovirus was the most common virus isolated from conjunctiva (66%)
- Common viral syndrome was Epidemic keratoconjunctivitis (88%)

Conjunctivitis



BACTERIAL CONJUNCTIVITIS

- It usually affects one eye but may spread easily to the fellow eye
- It is more common in children than in adults



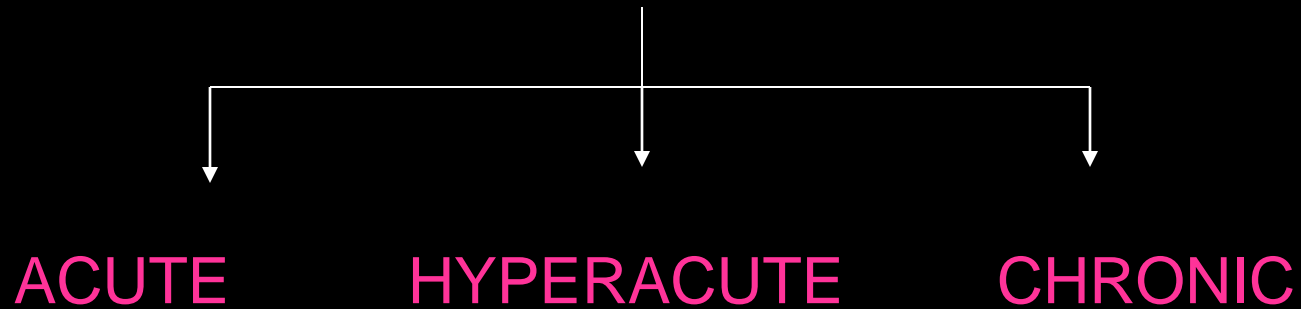
CONTD....

- Symptoms and Signs:
 - ❖ **Thick and Purulent discharge** that may cause the lids stick together, especially after sleeping
 - ❖ **Papillary Pattern**
 - ❖ Chemosis
 - ❖ Hyperaemia
 - ❖ Tearing
 - ❖ Irritation and/or a gritty feeling
 - ❖ Conjunctival membrane may be present
 - ❖ Corneal ulcer may occur

AETIOLOGICAL AGENTS

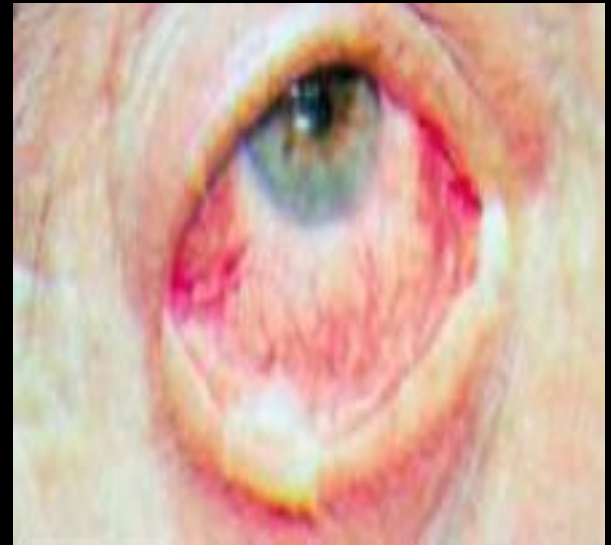
Neonates	Children	Adults
<i>Chlamydia trachomatis</i>	<i>Haemophilus influenzae</i>	<i>Staphylococcus aureus</i>
<i>Staphylococcus aureus</i>	<i>Streptococcus pneumoniae</i>	<i>Haemophilus influenzae</i>
<i>Haemophilus influenzae</i>	<i>Staphylococcus aureus</i>	<i>Streptococcus pneumoniae</i>
<i>Streptococcus pneumoniae</i>	<i>Moraxella species</i>	<i>Chlamydia trachomatis</i>
<i>Neisseria gonorrhoeae</i>	Coagulase negative <i>Staphylococci</i>	Coagulase negative <i>Staphylococci</i>

Bacterial Conjunctivitis



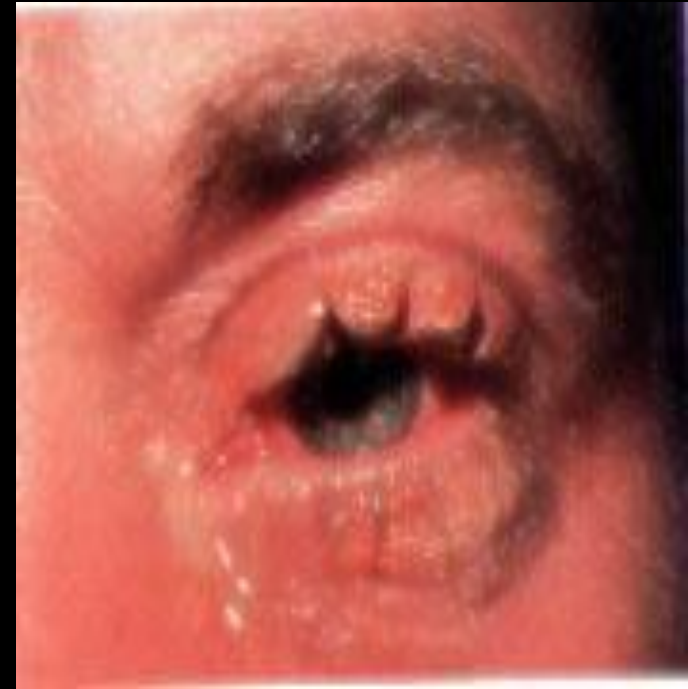
HYPERACUTE BACTERIAL CONJUNCTIVITIS

- Symptoms and Signs: Eyelid oedema, Severe, continuous and copious purulent discharge, chemosis, discomfort and pain
- *Neisseria gonorrhoeae* is frequent cause in sexually active patients. It also causes conjunctivitis in new born babies (ophthalmia neonatorum).
- In children conjunctivitis is due to *Neisseria meningitidis*
- Incubation period is few hours to 3 days.



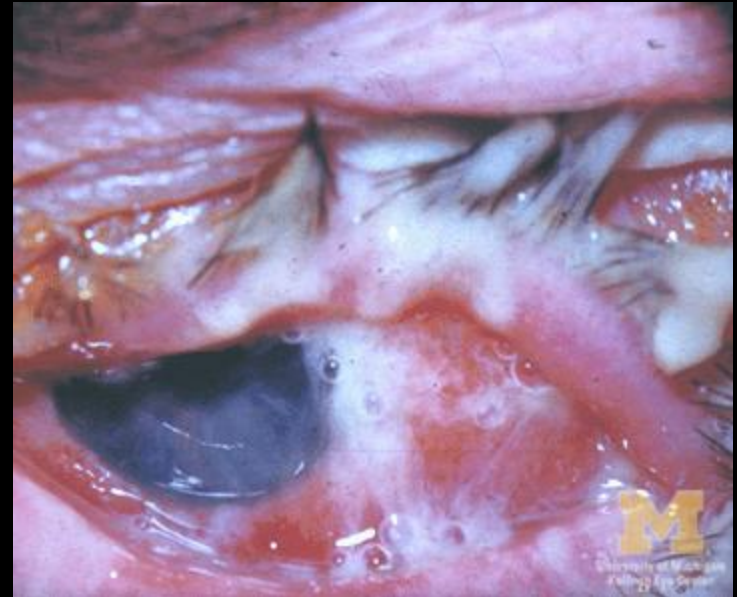
ACUTE BACTERIAL CONJUNCTIVITIS

- Symptoms and Signs: Red eye, Purulent Discharge with eye pain, discomfort or photophobia.
- The most common pathogens are:
 - *Streptococcus pneumoniae*
 - *Haemophilus influenzae*
 - *Staphylococcus aureus*



CHRONIC BACTERIAL CONJUNCTIVITIS

- Symptoms and Signs:
- Red eye with Purulent discharge
- The common pathogens are
- *Staphylococcus aureus*
- *Chlamydia trachomatis*

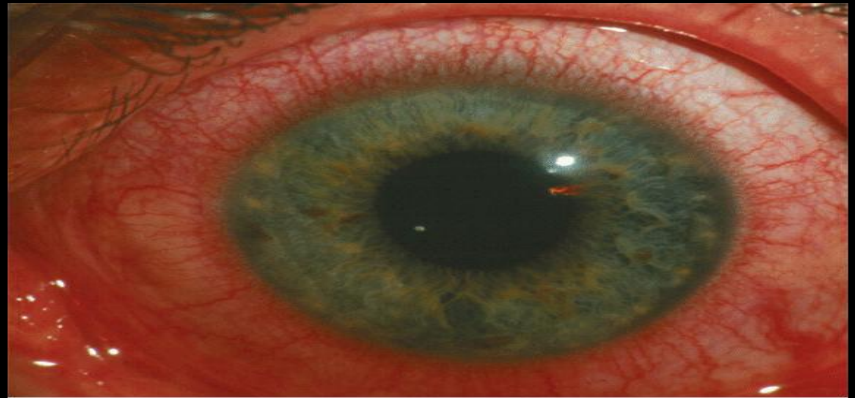


Chlamydia may cause three clinical syndromes:

Trachoma



Acute inclusion conjunctivitis



Inclusion conjunctivitis from Chlamydial infection. Note the mucopurulent discharge in the lower left corner.

Neonatal conjunctivitis



MEMBRANOUS CONJUNCTIVITIS

- The conjunctival surface is covered by fibrinous membrane.
- The aetiological agents are:
 - *Corynebacterium diphtheriae*
 - *Streptococcus*
 - *Pneumococcus*
- Symptoms and Signs: Swelling of lids with mucopurulent discharge. White membrane develops which may be True or Pseudomembrane. Preauricular adenopathy. Throat infection and fever may be present.

BACTERIAL DISTRIBUTION

Indian scenario

Microorganism	Conjunctivitis (250)	Total %age
<i>S aureus</i>	27	35(19.13)
<i>Str pneumoniae</i>	15	20(10.93)
<i>Gram positive cocci are most common Isolates and Staphylococcus aureus is the predominant one</i>		
<i>P aeruginosa</i>	1	9(4.92)
<i>Klebsiella spp</i>	4	5(2.74)
<i>E.Coli</i>	1	2(1.10)
<i>P mirabilis</i>	1	1(0.55)

A study of bacterial conjunctivitis in South Florida

- During the 10-year period, 1254 culture-positive pathogens were recovered from 2408 consecutive conjunctival swabs (52.1%).
- Gram-positive pathogens accounted for 52.2% of culture positive isolates.
- *Staphylococcus aureus* was the most frequent isolate overall (37.6%) and in patients older than 6 years (47.8%).

A Study of Ophthalmia neonatorum in Iran

Microorganism	Total %age
<i>S aureus</i>	31
<i>E coli</i>	23
<i>S aureus</i> was predominant followed by <i>E coli</i> and <i>S epidermidis</i>	
<i>N gonorrhoeae</i>	3
<i>C trachomatis</i>	2
<i>P aeruginosa</i>	2

FUNGAL CONJUNCTIVITIS

- Fungal infections are due to *Aspergillus*, *Candida albicans*, *Nocardia*, *Leptothrix* and *Sporothrix*
- Follicular conjunctivitis with Lymphadenopathy.
- Ulcerative or Pseudomembrane may develop



NON INFECTIOUS CONJUNCTIVITIS

- Non infectious conjunctivitis includes:
 - Allergic Conjunctivitis
 - Endogenous conjunctivitis
 - Toxic and chemical Conjunctivitis
 - Irritants

- It is not contagious

ALLERGIC CONJUNCTIVITIS

- It occurs very frequently
- Some common allergens include:
 - Pollen from trees, grass and ragweed
 - Animal skin
 - Secretions such as saliva
 - Perfumes
 - Cosmetics
 - Skin medicines
 - Air pollution
 - Smoke



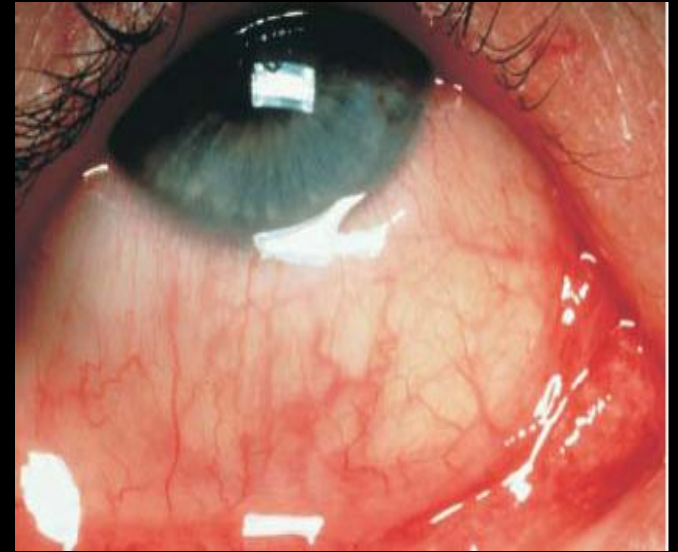
- Symptom and Signs include:
 - Itching (PRURITUS)
 - Stringy mucoid discharge
 - Tearing
 - Conjunctival edema
 - Hyperemia
 - Burning
 - Photophobia.
 - Eyelid edema is also common.
- Symptoms are usually bilateral but one eye can be affected more than the other.



TYPES OF ALLERGIC CONJUNCTIVITIS

- Allergic conjunctivitis may be divided into 5 major subcategories:
- Seasonal allergic conjunctivitis (SAC)
- Perennial allergic conjunctivitis (PAC)
- Vernal keratoconjunctivitis (VKC)
- Atopic keratoconjunctivitis (AKC)
- Giant papillary conjunctivitis(GPC)

- Seasonal allergic conjunctivitis (SAC): also known as Hay fever.
 - Occurs during pollen season.
 - Itching, watering, redness of eye and conjunctiva is pink, slightly thick and occasionally swollen.
-
- Perennial allergic conjunctivitis (PAC):
 - It lasts throughout the year.
 - Symptoms are same as SAC but are less severe.



➤ **Giant papillary conjunctivitis (GPC):**

It is caused by prolonged presence of foreign body in eye.

There is itching, discomfort and increased mucous discharge.



➤ **Vernal Keratoconjunctivitis (VKC):**

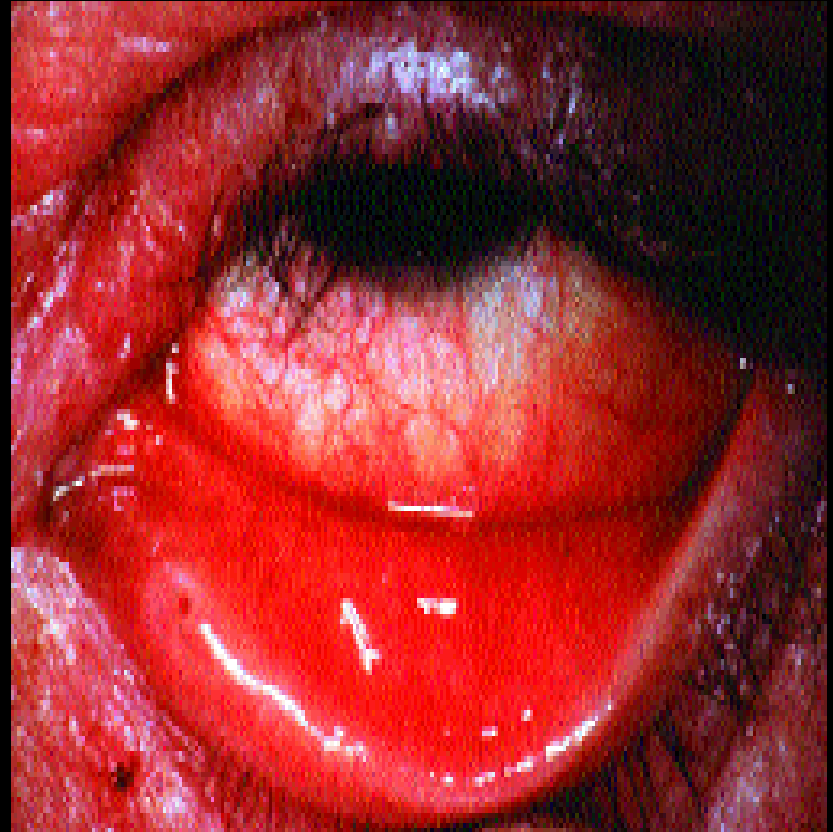
This is a rare, chronic seasonal (vernal refers to the season, spring)

Symptoms include redness, watering, intense itching, sensitivity to sunlight, blurred vision and a thick string-like discharge.



➤ Atopic Keratoconjunctivitis (AKC):

- This is a very serious condition, that is, fortunately, rare.
- It affects adults with a skin condition known as atopic dermatitis.
- There is intense itching, burning, heavy discharge and blurring of vision.



- Phlyctenular conjunctivitis:
- It is an allergic condition caused by endogenous bacterial proteins.



EPIDEMIOLOGY OF ALLERGIC CONJUNCTIVITIS

Allergic conjunctivitis	Total percentage
SAC	63.7
The most frequent allergic cases were - SAC and PAC	
VKC	21
AKC	15.5

EPIDEMIOLOGY OF ALLERGIC CONJUNCTIVITIS

- According to Bonini, seasonal allergic conjunctivitis (SAC) accompanies pollinosis in 95.2%.
- Buckley's studies revealed symptoms of SAC in 21% of British population.
- Berdy reported a similar result in 20% of Americans.
- Weeke estimates that depending on geographical region and age of examined patients, allergic eye diseases occur in 5 to 22% of the population.

ENDOGENOUS OR AUTOIMMUNE CONJUNCTIVITIS

- o It occurs because of activation of immune system
- o The commonest are:
 - o Cicatricial pemphigoid
 - o Stevens-Johnson syndrome (erythema multiforme)-
Hypersensitivity to drugs (for example sulphonamides)
 - o Infections caused by *Mycoplasma pneumoniae* and the
Herpes simplex virus.

TOXIC AND CHEMICAL CONJUNCTIVITIS

- Toxic conjunctivitis is also referred to as Toxic Follicular conjunctivitis
- Caused by Certain chemicals and toxins, Drugs, Cosmetics, Viral proteins.



NON SPECIFIC CONJUNCTIVITIS

- It is not caused by an infection or allergy.
- The most common causes include one of the following:
- People with a dry eye may have chronic or intermittent redness or discharge.
- A person whose eyes are irrigated after a chemical splash may have redness and discharge.
- A person with a foreign body (e.g.: dust, eyelash) in the eye may have redness and discharge for 12 to 24 hours after the object is removed.

➤ DEGENERATIVE CHANGES

- Concretions
- Pinguecula
- Pterygium

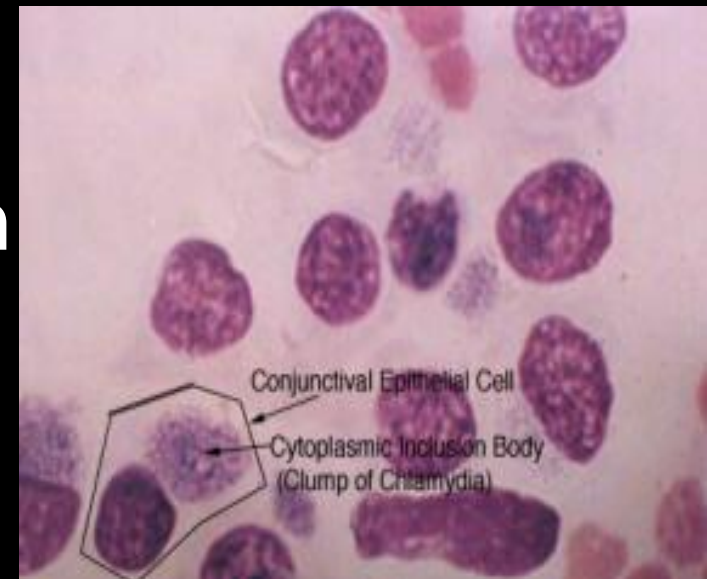
➤ SYMPTOMATIC CONDITIONS:

- Ecchymosis
- Xerosis
- Chemosis
- Argyrosis

➤ CYSTS AND TUMORS

DIAGNOSIS

- The diagnosis of conjunctivitis is confirmed by:
- Bacteriological examination



Histological examination



- Conjunctival Culture



DIFFERENTIAL DIAGNOSIS

	AC	VKC	AKC	GPC	BACTERIAL	VIRAL
SIGNS						
CHEMOSIS	+	+/-	+/-	+/-	+/-	+/-
LYMPH NODE	-	-	-	-	-	+/-
DISCHARGE	CLEAR MUCOID	STRING Y MUCOID	STRING Y MUCOID	CLEAR WHITE MUCOID	MUCOPURULENT	CLEAR MUCOID
LID INVOLVEMENT	-	+	+	-	+	-

CONTD....

SYMPTOMS	AC	VKC	AKC	GPC	BACTERIAL	VIRAL
PRURITUS	+	++	++	++	-	-
BURNING	-	-	-	-	-	++
GRITTY SENSATION	+/-	+/-	+/-	+	+	+
SEASONAL VARIATION	+	+	+/-	+/-	+/-	+/-

MANAGEMENT

- Viral and other non- purulent types of conjunctivitis do not require antimicrobial treatment.
- These conditions are self limited and may last 1-3 weeks.
- Acute bacterial conjunctivitis is self limited condition resolves within 10-14 days.

TREATMENT

- o Viral conjunctivitis does not respond at all to antibiotic medication.
- o Symptoms can be relieved with the use of eye drops or **artificial tears** being applied to the eye.
- o Applying a warm compress using a pad of sterile cotton may also soothe the eye, reducing the desire to itch the eye, which only increases the soreness.
- o Viral conjunctivitis may take 7-10 days to clear completely.



- Treatment of Bacterial Conjunctivitis:
- This type of conjunctivitis is usually treated with antibiotic eye drops or ointments.
- Improvement can occur after three or four days of treatment
- Antibiotics commonly used are Norfloxacin, Ciprofloxacin.
- Other antibiotics include Chloramphenicol, gentamicin, framycin, tobramycin, neomycin, polymyxin.
- Ointments are used during sleep or night. Antibiotics used as ointment are chloromycetin, gentamicin, tetracycline, framycetin, neomycin, polymyxin and ciprofloxacin

- Treatment of Allergic conjunctivitis:
- Bathing the eyes with running water may bring instant if temporary relief.
- The use of anti-histamines (Topical or Oral) to treat the allergy is the best.
- The doctor may prescribe decongestants, steroids and anti-inflammatory eye drops

- Treatment of Fungal conjunctivitis is done with topical 1% Miconazole or clotrimazole
- Non-specific conjunctivitis usually resolves within a few days without any treatment
- Lubricant, such as drops or ointments can be used for quick relief.

COMPLICATIONS

- The most at risk of developing complications from conjunctivitis are neonates.
- Infective conjunctivitis can lead to the following conditions:
- Meningitis
- Cellulitis
- Septicaemia

CONTD....

- Viral conjunctivitis can spread to the **cornea**. This is called **keratitis** and can be serious because some viruses, such as the herpes virus, can cause blindness
- Infection with gonococcal bacteria may cause **corneal ulceration**, abscess, perforation, destruction of the eye, and blindness
- In underdeveloped countries, Chlamydia infection (trachoma) can lead to inversion of the eyelids; this results in irritation, **infection of the cornea**, scarring, and damage to the cornea that may lead to blindness.

CONTD....

- Allergic conjunctivitis is unpleasant. It can disrupt the smooth running of day-to-day life.
- The cornea is involved rarely in acute forms of allergic conjunctivitis
- In the chronic forms of ocular allergy such as vernal keratoconjunctivitis and atopic Keratoconjunctivitis, the “kerato” reflects that the cornea is involved.

THANK YOU