Chronic Conjunctivitis and Trachoma

VERNAL KERATOCONJUNCTIVITIS (VKC) OR SPRING CATARRH

- It is a recurrent, bilateral, interstitial, self-limiting, allergic inflammation of the conjunctiva having a periodic seasonal incidence.

- An atopic allergic disorder in many cases, in which IgE-mediated mechanisms play an important role.

Predisposing factors

1. *Age and sex. 4-20 years; more common in boys.*

2. *Season. More common in summer; hence the* name spring catarrh looks a misnomer.

Recently it is being labelled as '*Warm weather conjunctivitis'.*

3. *Climate. More prevalent in tropics, less in* temperate zones and almost non-existent in cold climate.

Clinical picture

- ***Symptoms. Spring catarrh is characterised by marked*** burning and itching sensation, mild to severe photophobia, lacrimation, stringy (ropy) discharge and heaviness of lids.

- ***Signs of vernal keratoconjunctivitis can be described*** in following three clinical forms:
- 1. *Palpebral form.*
- 2. *Bulbar form.*
- 3. *Mixed form.*

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- 1. *Palpebral form. Usually upper tarsal conjunctiva*of both eyes is involved.

- The typical lesion is characterized by the presence of hard, flat topped, papillae arranged in a *'cobble-stone' or 'pavement stone', fashion.*
- *In severe cases, papillae* may hypertrophy to produce cauliflower like excrescences of 'giant papillae'. Conjunctival changes are associated with white ropy discharge.

- 2. *Bulbar form.*

  (i) dusky red triangular congestion of bulbar conjunctiva in palpebral area;

  (ii) gelatinous thickened accumulation of tissue around the limbus; and

  (iii) presence of discrete whitish raised dots along the limbus (Tranta's spots)

- ***Vernal keratopathy. Corneal involvement in VKC may*** be primary or secondary due to extension of limbal lesions.
- 1. *Punctate epithelial keratitis involving upper* cornea is usually associated with palpebral form of disease.
- *2.Ulcerative vernal keratitis (shield ulceration)* presents as a shallow transverse ulcer in upper part of cornea.
- 3. *Vernal corneal plaques*

- 4. *Subepithelial scarring occurs in the form of a* ring scar.
- 5. *Pseudogerontoxon is characterised by a classical* 'cupid's bow' outline.
- ***Clinical course of disease is often self-limiting and*** usually burns out spontaneously after 5-10 years.
- ***Differential diagnosis. Palpebral form of VKC needs*** to be differentiated from trachoma with pre-dominant papillary hypertrophy

Treatment

- **A. *Local therapy***

  1. *Topical steroids.*

  2. *Mast cell stabilizers such as sodium cromoglycate* (2%) drops.

  3. Topical antihistaminics.

  4. Topical cyclosporine drops.

  B. Systemic antihistamincs

- **C. *General measures include :***
- Dark goggles to prevent photophobia.
- Cold compresses and ice packs have soothing effects.
- Change of place from hot to cold area is recommended for recalcitrant cases.

- **D. *Treatment of vernal keratopathy***
- *Punctate epithelial keratitis requires no extra* treatment except that instillation of steroids should be increased.
- *Severe shield ulcer resistant to medical therapy* may need surgical treatment in the form of debridment, superficial keratectomy, excimer laser therapeutic kerateotomy as well as amniotic membrane transplantation to enhance re-epithelialization.

CHLAMYDIAL CONJUNCTIVITIS

- Like viruses they are obligate intracellular and filterable
- Like bacteria they contain both DNA and RNA, divide by binary fission and are sensitive to antibiotics.
- Combinedly form the PLT group (Psittacosis, Lymphogranuloma venereum andTrachomatis group).

- Species C. trachomatis C. lymphogranulomatis C. psittacosis
- ***Jones' classification.***
- *Class 1 : Blinding trachoma refers* to hyperendemic trachoma caused by serotypes A,B, Ba and C of Chlamydia trachomatis associated with secondary bacterial infection.

- *Class 2 : Non-blinding trachoma by* serotypes A, B, Ba, and C; but is usually not associated with secondary bacterial infections.

- *Class 3: Paratrachoma. It refers to oculogenital* chlamydial disease caused by serotypes D to K of *chlamydia trachomatis.*

- *It spreads from genitals to* eye and mostly seen in urban population. It manifests as either adult inclusion conjunctivitis or chlamydial ophthalmia neonatorum.

TRACHOMA

- The word 'trachoma' (Greek word)stands for 'rough' which describes the surface appearance of the conjunctiva in chronic trachoma.

- A type of chronic keratoconjunctivitis, primarily affecting the superficial epithelium of conjunctiva and cornea simultaneously.

- **A. *Causative organism:*** Chlamydia trachomatis
- The organism is epitheliotropic and produces intracytoplasmic inclusion bodies called H.P. bodies (*Halberstaedter Prowazeke* bodies).
- 11 serotypes of chlamydia
- Microimmunofluorescence techniques
- **B. *Predisposing factors.***
- 1. *Age.* 3. *Race (Jews).* 5. *Socioeconomic status.*
- 2. *Sex.* 4. *Climate.* 6. *Environmental factors*

- **C. *Source of infection:* C**onjunctival discharge of the affected person
- **D. *Modes of infection:***
- 1. *Direct spread (Air, Water)*
- 2. *Vector transmission (Flies)*
- 3. *Material transfer (Towel, handkerchief, surma rods)*

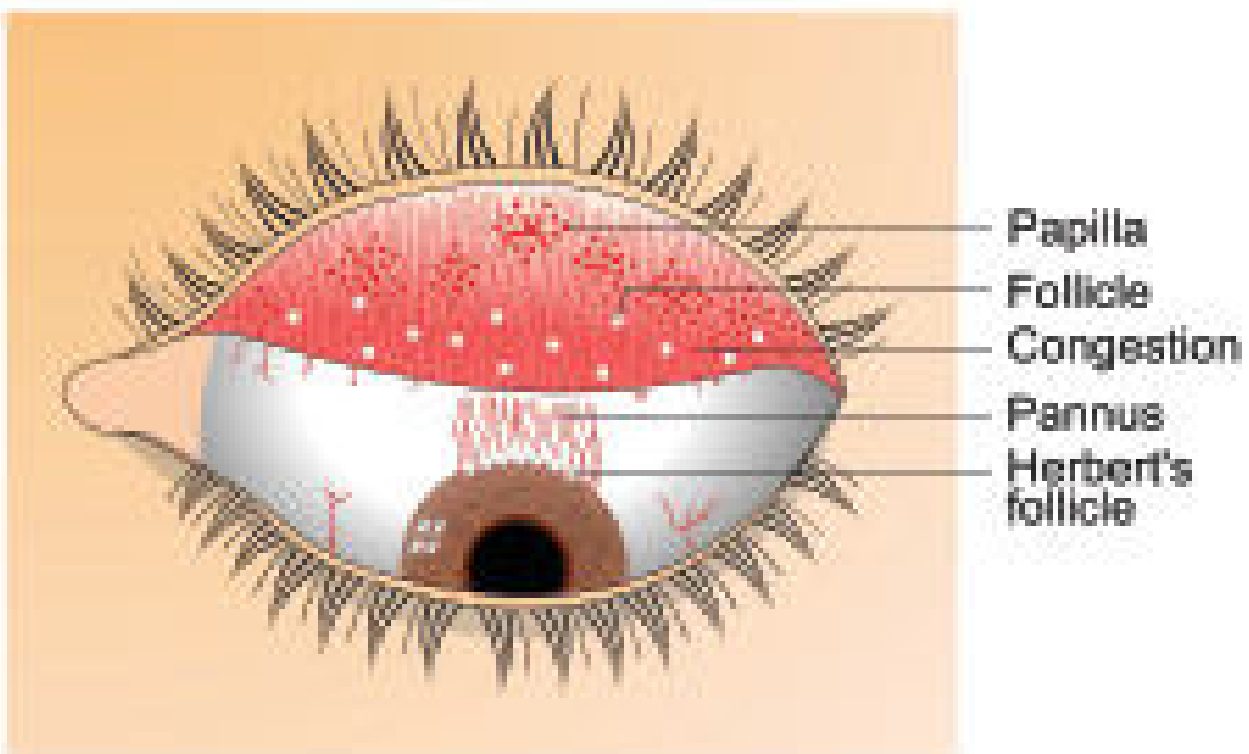
Clinical profile of trachoma

- ***Incubation period of trachoma varies from 5-22 days.*** Onset of disease is usually insidious (subacute), however, rarely it may present in acute form.
- In the absence of Secondary infection, a pure trachoma is mild and symptomless.
- But, mostly the picture is complicated by secondary infection
- In the early stages it is clinically indistinguishable from the bacterial conjunctivitis and the term '*trachoma dubium*' (doubtful trachoma) is sometimes used for this stage.

- *A.* ***Conjunctival signs***

1. Congestion of upper tarsal and forniceal conjunctiva.
2. Conjunctival follicles: Like boiled sagograins, commonly on upper tarsal plate and fornix; but may also be present in the lower fornix, plica semilunaris and caruncle.

Sometimes, (follicles may be seen on the bulbar conjunctiva (pathognomic of trachoma).



Structure of follicle

- *Follicles are formed due to* scattered aggregation of lymphocytes and other cells in the adenoid layer.

- Central part of each follicle is made up of mononuclear histiocytes, few lymphocytes and large multinucleated cells called *Leber cells*.

- *The cortical part is made up of a zone o*f lymphocytes showing active proliferation.
- Blood vessels are present in the most peripheral part. In later stages signs of necrosis are also seen.
- Presence of Leber cells and signs of necrosis differentiate trachoma follicles from follicles of other forms of follicular conjunctivitis.

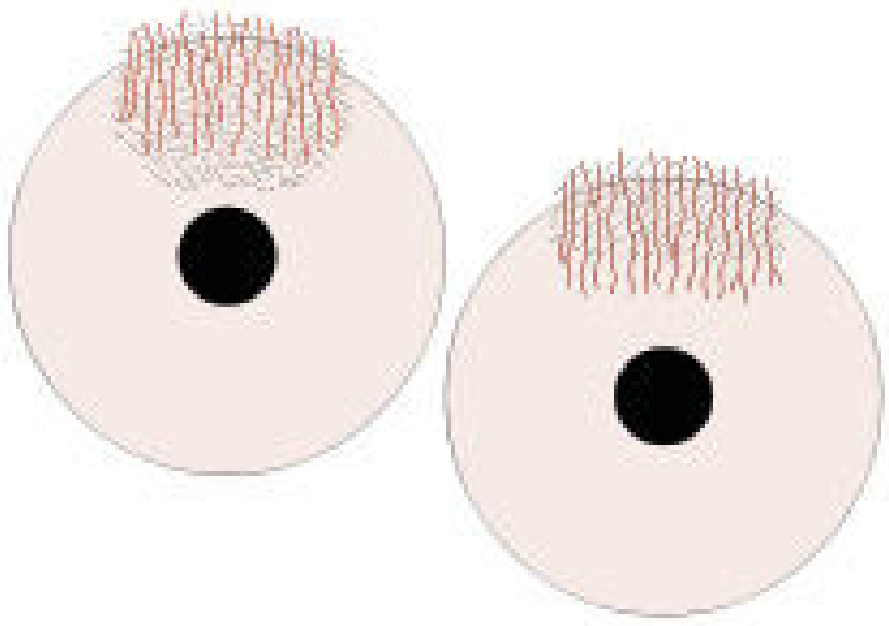
3. *Papillary hyperplasia. Papillae are reddish, flat* topped raised areas which give red and velvety appearance to the tarsal conjunctiva.

- Each papilla consists of central core of numerous dilated blood vessels surrounded by lymphocytes and covered by hypertrophic epithelium.

4. *Conjunctival scarring which may be* irregular, star-shaped or linear.

- Linear scar present in the sulcus subtarsalis is called *Arlt's line.*

5. *Concretions may be formed due to accumulation* of dead epithelial cells and inspissated mucus in the depressions called *glands of Henle.*



- **B. *Corneal signs***

  1. *Superficial keratitis may be present in the upper* part.

  2. *Herbert follicles refer to typical follicles present*

     in the limbal area.

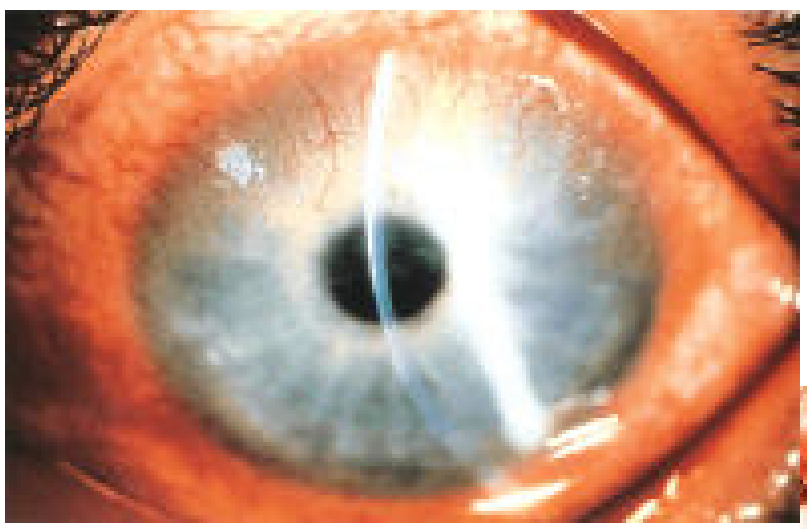
     These are histologically similar to conjunctival follicles.

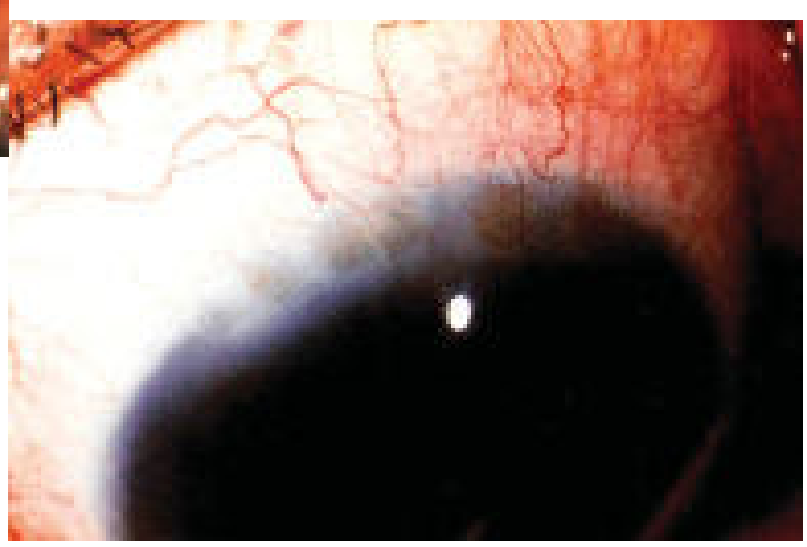
  3. *Pannus i.e., infiltration of the cornea associated*

     with vascularization is seen in upper part

- In *progressive pannus, infiltration of cornea is* ahead of vascularization.
- In *regressive pannus (pannus siccus) vessels* extend a short distance beyond the area of infiltration.

- 4. *Corneal ulcer may sometime develop at the* advancing edge of pannus.
- 5. *Herbert pits are the oval or circular pitted* scars, left after healing of Herbert follicles in the limbal area.
- 6. *Corneal opacity may be present in the upper* part.





McCallan's classification

- *Stage I (Incipient trachoma or stage of infiltration).*

  It is characterized by hyperaemia of palpebral conjunctiva and immature follicles.

- *Stage II (Established trachoma or stage of florid*

  infiltration). It is characterized by appearance of mature follicles, papillae and progressive corneal pannus.

- *Stage III (Cicatrising trachoma or stage of* scarring). It includes obvious scarring of palpebral conjunctiva.

- *Stage IV (Healed trachoma or stage of sequelae).*

  The disease is quite and cured but sequelae due to cicatrisation give rise to symptoms.

WHO classification 1987 (FISTO):

- 1. ***TF: Trachomatous inflammation-follicular***: *At* least five or more follicles (each 0.5 mm or more in diameter) must be present on the upper tarsal conjunctiva.

- Further, the deep tarsal vessels should be visible through the follicles and papillae.

- **2. *TI : Trachomatous inflammation intense***: *P*ronounced inflammatory thickening of the upper tarsal conjunctiva obscures more than half of the normal deep tarsal vessels.
- **3. *TS: Trachomatous scarring.*** *This stage is* diagnosed by the presence of scarring in the tarsal conjunctiva.
- **4. *TT: Trachomatous trichiasis***. *TT is labelled when* at least one eyelash rubs the eyeball.
- **5. *CO: Corneal opacity:*** easily visible corneal opacity is present over the pupil.

Sequelae of trachoma

- 1. *Sequelae in the lids may be trichiasis,* entropion, tylosis (thickening of lid margin), ptosis, madarosis and ankyloblepharon.
- 2. *Conjunctival sequelae include concretions,* pseudocyst, xerosis and symblepharon.
- 3. *Corneal sequelae may be corneal opacity, ectasia,* corneal xerosis and total corneal pannus (blinding sequelae).
- 4. *Other sequelae may be chronic dacryocystitis,* and chronic dacryoadenitis
- **Complications:** corneal ulcer

Diagnosis

A. ***The clinical diagnosis of trachoma is made from*** its typical signs; at least two sets of signs should be present out of the following:

- 1. Conjunctival follicles and papillae
- 2. Pannus progressive or regressive
- 3. Epithelial keratitis near superior limbus
- 4. Signs of cicatrisation or its sequelae

- **B. *Laboratory diagnosis.***
- 1. *Conjunctival cytology. Giemsa stained smears* showing a predominantly polymorphonuclear reaction with presence of plasma cells and Leber cells is suggestive of trachoma.
- 2. *Detection of inclusion bodies in conjunctival* smear may be possible by Giemsa stain, iodine stain or immunofluorescent staining, specially in cases with active trachoma.

- 3. *Enzyme-linked immunosorbent assay (ELISA) for* chlamydial antigens.
- 4. *Polymerase chain reaction (PCR) is also useful.*
- 5. *Isolation of chlamydia is possible by yolk-sac* inoculation method and tissue culture technique.

Standard single-passage McCoy cell culture requires at least 3 days.

- 6. *Serotyping of TRIC agents is done by detecting* specific antibodies using microimmunofluorescence (micro-IF) method.
- *Direct monoclonal fluorescent antibody microscopy of* conjunctival smear is rapid and inexpensive.

Differential diagnosis

- **1.** Trachoma with follicular hypertrophy must be differentiated from acute adenoviral follicular conjunctivitis (epidemic keratoconjunctivitis).

- **2.** Trachoma with predominant papillary hypertrophy needs to be differentiated from palpebral form of spring catarrh

Management

- **A. *Treatment of active trachoma***

  1. *Topical therapy regimes*

  1 percent tetracycline or 1 percent erythromycin eye ointment 4 times a day for 6 weeks or 20 percent sulfacetamide eye drops three times a day along with 1 percent tetracycline eye ointment at bed time for 6 weeks.

- The *continuous treatment for active trachoma* should be followed by an *intermittent treatment* especially in endemic or hyperendemic area.

2. Systemic therapy regimes. Tetracycline or erythromycin 250 mg orally, four times a day for 3-4 weeks

or

doxycycline 100 mg orally twice daily for 3-4 weeks or single dose of 1 gm azithromycin has also been reported to be equally effective in treating trachoma.

- **B. *Treatment of trachoma sequelae***
- **C. *Prophylaxis***
- 1. *Hygienic measures.*
- 2. *Early treatment of conjunctivitis.*
- 3. *Blanket antibiotic therapy (intermittent treatment).* In endemic areas to minimise the intensity and severity of disease.
- 1 percent tetracycline eye ointment twice daily for 5 days in a month for 6 months.

ADULT INCLUSION CONJUNCTIVITIS

- It is a type of acute follicular conjunctivitis associated with mucopurulent discharge. It usually affects the sexually active young adults.
- Inclusion conjunctivitis is caused by serotypes D to K of Chlamydia trachomatis.

- The primary source of infection is urethritis in males and cervicitis in females.
- The transmission of infection may occur to eyes either through contaminated fingers or more commonly through contaminated water of swimming pools (hence the name *swimming pool conjunctivitis*).

- **Clinical features**
- *Incubation period of the disease is 4-12 days.*
- *Symptoms*
- Ocular discomfort, foreign body sensation,
- Mild photophobia, and
- Mucopurulent discharge from the eyes.

- *Signs of inclusion conjunctivitis are:*
- Conjunctival hyperaemia, more marked in fornices.
- Acute follicular hypertrophy predominantly of lower palpebral conjunctiva
- Superficial keratitis in upper half of cornea.
- Sometimes, superior micropannus may also occur.
- Pre-auricular lymphadenopathy is a usual finding

Signs of acute follicular conjunctivitis.

Treatment

- *Topical therapy*.

1.It consists of tetracycline (1%) eye ointment 4 times a day for 6 weeks.

2. *Systemic therapy is very important, since the* condition is often associated with an asymptomatic venereal infection. Commonly employed antibiotics are:

- Tetracycline 250 mg four times a day for 3-4weeks.
- Erythromycin 250 mg four times a day for 3-4weeks

CHRONIC BACERTIAL/CATARRHAL CONJUNCTIVITIS

- 'Chronic catarrhal conjunctivitis' also known as *'simple chronic conjunctivitis' is characterised by* mild catarrhal inflammation of the conjunctiva.
- **Etiology**
- **A. *Predisposing factors***
- 1. *Chronic exposure to dust, smoke, and chemical* irritants.
- 2. *Local cause of irritation such as trichiasis,* concretions, foreign body and seborrhoeic scales.
- 3. *Eye strain due to refractive errors, phorias or* convergence insufficiency.
- 4. *Abuse of alcohol, insomnia and metabolic* disorders.

- **B. *Causative organisms***
- *Staphylococcus aureus is the commonest cause* of chronic bacterial conjunctivitis.
- *Gram negative rods such as Proteus mirabilis, Klebsiella pneumoniae, Escherichia coli and Moraxella lacunata are other rare causes.*

- **C. *Source and mode of infection.*** Chronic conjunctivitis may occur:
- 1. *As continuation of acute mucopurulent conjunctivitis when untreated or partially treated.*
- 2. *As chronic infection from associated chronic* dacryocystitis, chronic rhinitis or chronic upper respiratory catarrh.
- 3. *As a mild exogenous infection which results from* direct contact, air-borne or material transfer of infection.

Clinical picture

- ***Symptoms of simple chronic conjunctivitis include:***
- *Burning and grittiness in the eyes, especially in* the evening.
- *Mild chronic redness in the eyes.*
- *Feeling of heat and dryness on the lid margins.*
- Difficulty in keeping the eyes open.
- *Mild mucoid discharge especially in the canthi.*
- Off and on lacrimation.
- Feeling of sleepiness and tiredness in the eyes.

- ***Signs***
- Ocular examination may reveal:
- Congestion of posterior conjunctival vessels.
- Mild papillary hypertrophy of the palpebral conjunctiva.
- Surface of the conjunctiva looks sticky.
- Lid margins may be congested.

Treatment

- 1. Predisposing factors when associated should betreated and eliminated.
- 2. *Topical antibiotics such as chloramphenicol or* gentamycin should be instilled 3-4 times a day for about 2 weeks to eliminate the mild chronic infection.
- 3. *Astringent eye drops such as zinc-boric acid* drops provide symptomatic relief.

ANGULAR CONJUNCTIVITIS

- Characterised by mild grade inflammation confined to the conjunctiva and lid margins near the angles associated with maceration of the surrounding skin.
- **Etiology**
- 1. *Predisposing factors are same as for 'simple* chronic conjunctivitis'.
- 2. *Causative organisms. Moraxella axenfeld is the* commonest causative organism.
- *3.Source of infection is usually nasal cavity.*

Clinical picture

- ***Symptoms***
- Irritation, smarting sensation and feeling of discomfort in the eyes.
- History of collection of dirty-white foamy discharge at the angles.
- Redness in the angles of eyes.

Signs include:

- *Hyperaemia of bulbar conjunctiva near the canthi.*
- *Hyperaemia of lid margins near the angles.*
- *Excoriation of the skin around the angles.*
- Presence of foamy mucopurulent discharge at the angles.

Treatment

- A. ***Prophylaxis includes treatment of associated*** nasal infection and good personal hygiene.
- B. ***Curative treatment consists of :***
- 1. *Oxytetracycline (1%) eye ointment 2-3 times a* day for 9-14 days will eradicate the infection.
- 2. *Zinc lotion instilled in day time and zinc oxide* ointment at bed time inhibits the proteolytic ferment and thus helps in reducing the maceration.

Phlyctenular conjunctivitis

Viral conjunctivitis

- A. Acute serous conjunctivitis
- B. Acute hemorrhagic conjunctivitis
- C. Acute follicular conjunctivitis.