

Ophthalmology

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Learning objectives:

At the end of lecture, students should be able to:

1. Differentiate among different types of allergic conjunctivitis from simple allergy to the most severe one by history and examination of various signs.
2. Understand different allergens, seasons and environments that causing aggravation of allergic conjunctivitis.
3. The students should understand that the severe forms of allergic conjunctivitis might cause blindness.
4. Prevention of allergic conjunctivitis & Stepwise treatment should be understood well.

Allergic conjunctivitis

1- Allergic rhinoconjunctivitis (acute allergic conjunctivitis):

- The **most common** type of eye allergy.
- It is a hypersensitivity reaction (type I) to a specific airborne antigens.
- Usually there is associating nasal symptoms (so it is called rhinoconjunctivitis) that is thought to be a result of one or more of the following fact:
 - a- Direct effect of the allergen on the nasal mucosa and conjunctiva.
 - b- We have nasolacrimal drainage, so the excessive tears produced are drained to the nose.

c- As both of them (the conjunctiva and nasal mucosa) are supplied by pterygopalatine ganglia, so the stimulation of one of them will lead to stimulation of the other.

- There are two types:

a- Seasonal allergic rhinoconjunctivitis:

- Acute onset of "hay fever" symptoms.
- The most common allergens are pollens.
- Usually occurs during summer.

b- Perennial allergic rhinoconjunctivitis:

- *less severe and less prevalent* than seasonal allergic rhinoconjunctivitis
- Usual allergens are *house-dust mites or animal dander*.
- Symptoms occur *throughout the year*.

Presentation:

Acute, transient attacks of slightly red, itchy and watery eyes associated with sneezing and a watery nasal discharge.

Signs:

- Mild to moderate lids oedema
- Periorbital oedema in severe cases.
- Milky or pinkish appearance of conjunctiva as a result of oedema and injection.
- Mild papillary reaction in the upper tarsal conjunctiva.

Treatment:

Either topical mast cell stabilizer e.g. nedocromil & lodoxamide, or topical antihistamine e.g. levocabastine & azelastine.

* Only in very rare and severe cases we need topical steroids.

2- Vernal keratoconjunctivitis (spring catarrh):

- It is a recurrent, bilateral, external, ocular inflammation affecting children and young adults.
- More common in male than females.
- Vernal keratoconjunctivitis is an allergic disorder in which IgE and cell-mediated immune mechanisms play an important role (hypersensitivity reactions type I & IV).
- Atopic patients often develop asthma and eczema in infancy.
- The onset of vernal keratoconjunctivitis is usually after the age of 5 years (5-8y) and the condition eventually resolves around puberty, only rarely persisting beyond the age of 25 years.
- As its name suggests (seasonal basis), the peak incidence of symptoms occur between April and August but many patients have year-round disease.
- The condition is more common in warm, dry climate and less frequently in colder climates.

Clinical features:

The main symptoms are:

- Intense ocular itching.
- Lacrimation.
- Photophobia.
- Foreign body sensation.
- Burning.
- Thick mucus discharge.
- Ptosis also occurs (it is a mechanical ptosis as it occurs due to chronic inflammation and oedema that causes heaviness and increased weight of the eyelid).

There are three main types (according to anatomical distribution of vernal disease):

a- Palpebral, **b-** Limbal and **c-** mixed.

Signs:

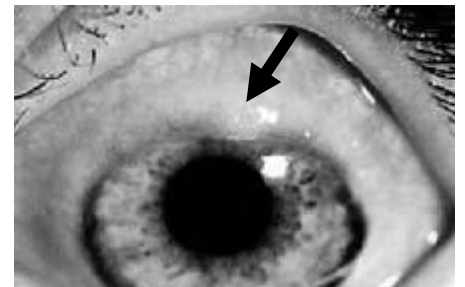
For conjunctivitis:

*** For palpebral vernal keratoconjunctivitis, signs in chronological order:**

- Conjunctivitis hyperaemia.
- Diffuse papillary hypertrophy mostly on the superior tarsus (tarsal conjunctiva).
- Enlarged of papillae ends in flat-topped polygonal appearance (cobblestones).

*** For limbal vernal keratoconjunctivitis:**

- It is characterized by mucoid nodules that have a smooth round surface.
- Discrete white superficial spots (Trantas dots); which are composed of collections of inflammatory predominantly eosinophils, are found scattered around the limbus.



*** For mixed vernal keratoconjunctivitis:**

- There is papillary reactions and Trantas dots.

For keratitis:

- Punctate keratopathy (epithelial erosions, micro erosions), it is the earliest finding.
- Macro erosions (result of continued epithelial loss, i.e. small ulcers).
- Plaque (macro erosions coated by layers of mucus which cannot be wetted by tears and resists epithelization).
- Subepithelial scarring (sign of previous severe corneal involvement), it occurs due persistent inflammation that prevents healing).
- Pseudogerontoxon, which resembles as arcus senilis. It is seen in the outline of previously inflamed limbus (occurs if the epithelial scarring and opacification are in periphery the limbus).

Treatment:

- 1- Topical steroids: (its use is mandatory)

- As the patients will not heal by any drug, so we use weak steroids as fluorometholone rather than dexamethasone, betamethasone or prednisolone as weak ones are of less penetration to cause increase in IOP or to cause cataract as the strong steroids.

- Short course.

- Potent steroid, long course causes increase in intraocular pressure and cataract, so the patient get blind due to use of topical steroids, especially seen in those jumping from one doctor to another as no one can cure them.

2- Mast cell stabilizers:

nedocromil 0.1% drops *2 daily

or lodoxomide 0.1% drops *4 daily.

or sodium cromoglycate 2% *4 daily

They are not effective as steroids in controlling **acute** exacerbation (as their actions starts when all mediators released are used, so their action delays for few days).

3- Acetylcysteine 5% drops *4 daily, as treatment of early plaque formation (mucolytic).

4- Topical cyclosporin A: used in steroids resistant cases.

5- Debridement: of early mucus plaques

6- Supratarsal injection of steroids: it is very effective in patients with severe disease unresponsive to conventional therapy.

Conjunctivitis in mucocutaneous diseases (Autoimmune conjunctivitis)

1- Cicatricial pemphigoid:

- It is a rare, idiopathic, chronic, progressive, autoimmune, mucocutaneous disorder that primarily affects elderly patients, and it affects females more than males.

- About 90% of patients have lesions of the oral mucosa but skin lesions are less common.

Presentation:

- Subacute onset of non-specific symptoms such as:
Irritation, burning and tearing, so the diagnosis may be easily overlooked (missed).

Signs: in chronological order:

- a- Papillary conjunctivitis plus diffuse conjunctival hyperaemia.
- b- Subconjunctival bullae that ends with ulceration and pseudomembranes.
- c- Later changes: chronic inflammation, subepithelial fibrosis and conjunctival shrinkage.

complications:

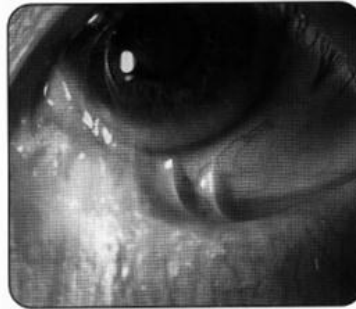
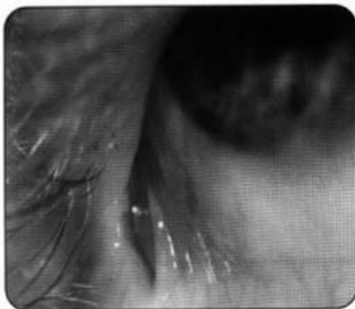
- a- Dry eye: due to:
 - Fibrous occlusion of ductules of the lacrimal and accessory lacrimal glands.
 - Destruction of the goblet cells.

b- Symblepharon: Adhesions between bulbar and palpebral conjunctivae.

Symblepharon formation demonstrated by drawing lower lid down and having the patient look up. →



c- Ankyloblepharon: Adhesions between upper and lower eyelids at the outer canthi.



Progressive symblepharon formation

Ankyloblepharon

d- Keratopathy: (sight-threatening) caused by:

- Cicatricial entropion.
- Metaplastic lashes (the lashes emerge from the orifices of meibomian glands).
- Lagophthalmos (partial or total inability to close the lids).
- Dry eyes.

e- End stage disease:

- Total keratinization of the cornea.
- Obliteration of fornices.

- Corneal neovascularization.
- Corneal ulceration.
- Secondary bacterial infection.

Treatment of cicatricial pemphigoid:

a- Topical therapy:

- Steroids in acute stage.
- Artificial tears.
- Antibiotics (protection from bacterial infection).

b- Systemic therapy:

- Steroids are used in acute manifestation.
- Long term therapy, we use dapsone and cytotoxic agents (azathioprine, cyclophosphamide) to suppress conjunctival inflammation.

c- Silicon contact lenses:

- To protect cornea from trichiasis and drying.
- Holding tear film.

d- Surgery: (Not done in acute stage, as it may accelerate incidence of infections)

- Correction of entropion.
- Punctal occlusion if not already occluded, to prevent tear drainage by nasolacrimal duct.
- Tarsorrhaphy (suturing of both lids) or injection of botulinum toxin into levator muscle.

2- Stevens-Johnson syndrome: (compare between this item and the previous one)

It is an *acute, self-limiting, severe, mucocutaneous vesiculobullous disease*, which primarily occurs in *young healthy individuals*, and *males* are affected more often than females.

Precipitating factors: are hypersensitivity reactions to:

a- Drugs.

b- Infectious e.g. *Mycoplasma pneumoniae*, Herpes simplex virus.

A cause is found in only 50% of cases.

Basic lesion:

It is an acute vasculitis, which affects the *skin in 100%* and the conjunctiva in 90%.

Presentation:

Fever, malaise, sore throat, cough and arthralgia.

Ocular signs:

a- The eyelids are swollen and crusted.

b- conjunctivitis of different grades varies in severity as follows:

i- Transient mild papillary conjunctivitis.

ii- Severe membranous or pseudomembranous conjunctiva.

iii- Shedding of the membranes is followed by the development of focal fibrotic patches (replacement by fibrous tissue).

Complications:

- a-** Symblepharon.
- b-** Metaplastic lashes: which have fine and arise from the openings of damaged meibomian glands.
- c-** Epiphora: caused by lacrimal drainage obstruction and normal tear production, but if there is normal lacrimal drainage but excessive production then it is lacrimation.
- d-** Dry eye: due to obstruction of lacrimal ductules.
- e-** Keratopathy: secondary to:
 - i-** Cicatricial entropion.
 - ii-** Metaplastic lashes.
 - iii-** Dry eyes.

Treatment:

- a-** Topical steroids may control vasculitis .
- b-** Scleral contact lens to prevent symblepharon.
- c-** Other measures:
 - i-** Tropical retinoic acid for keratinization.
 - ii-** Artificial tear.
 - iii-** Punctate occlusion. } For treatment of dry eye
 - iv-** Surgery to correct permanent deformities.

Conjunctival Degenerations

1- Pinguecula:

It is an extremely common lesion which consists of a yellow-white deposit on the bulbar conjunctiva adjacent to the nasal or temporal aspect of the limbus and it is usually asymptomatic.

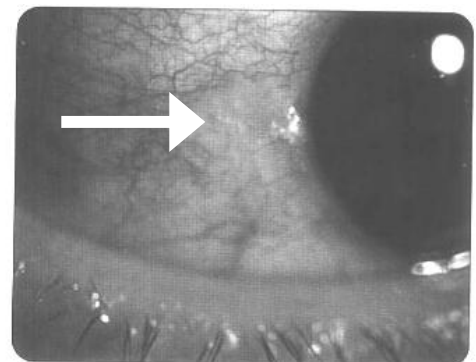
Histology:

Degeneration of the collagen fibers of the conjunctival stroma, thinning of the overlying epithelium and occasionally calcification.

Some pinguecula may enlarge very slowly but surgical excision is seldom required.

2- Concretions:

- They are small yellow-white deposits.
- Commonly present in the palpebral conjunctiva of the elderly.
- Also in patients with chronic meibomian gland disease.

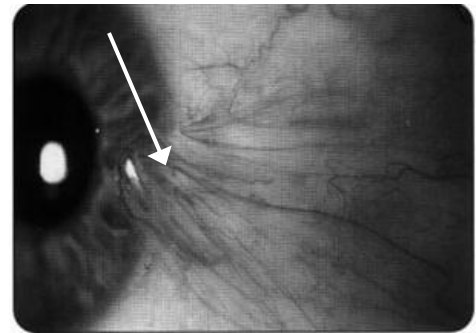


- Usually asymptomatic, but occasionally causes foreign body sensation when erode through the epithelium.

Treatment: They can be easily removed with a needle.

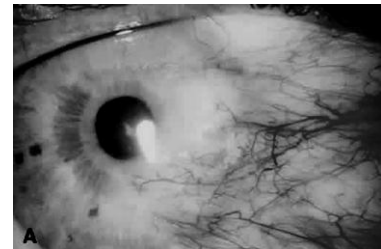
3- Pterygium:

- It is a triangular sheet of conjunctival fibrovascular tissue invades the cornea.
- Occurs in patients who have been living in hot climates.
- May represent a response to chronic dryness and exposure to the sun.



Signs:

- a-** Small, grey, corneal opacities near the nasal limbus.
- b-** Then, the conjunctiva overgrows these opacities and progressively invades onto the cornea in a triangular fashion.
- c-** A deposit of iron (Stocker line) may be present in the corneal epithelium anterior to the advancing head of the pterygium.



* Usually asymptomatic.

Treatment:

Surgical excision: needed only in these cases:

- i-** If it is threatening the visual axis.
- ii-** For cosmetic reason.
- iii-** Severe irritation.