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Glaucomas ESG 2019



What lies underneath

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Case 1

PH: 61 years old male , retired, nonsmoker.

PC.: 10/7 pain, photophobia, itching and watering in both eyes, slight blurry vision


POH.: POAG. (Presenting IOP 30 and 29)

PMH.: Asthma.

Current medications:

- Ventolin pump.
- Xalatan ED
- Alphagan ED

Allergies: Unknown.



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Examinations

- VA:

RE 6/12 LE 6/9

Eye lids: Bilateral lower lid ectropion, skin is dry, erythematous and shows crusting.

- Conjunctiva and Cornea:

- Lens:

- IOP:

RE 12 mmhg LE 12 mmhg

- Fundus

Flat Retina, Normal Macula

Optic nerve cupping 0.8 OD, 0.7 OS



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Management

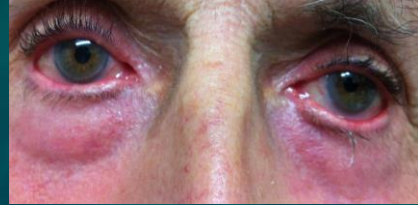
- Stop All medication
- Cold compresses
- Preservative free tears substitutes
- Preservative free prostaglandins analogue
- Topical steroid cream
- Oral antihistaminic tables.

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Two weeks later

- VA 6/9 each eye
- Corneal surface is smooth with normal tear break up time.
- Good contact between the lid margin and the ocular surface
- IOP 16, 17 mmhg.
- Plan:



Patient advised to stop steroid cream and oral antihistaminic

Continue lid hygiene and preservative free prostaglandins and tears substitutes.

Review in 4 weeks

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Before and after



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Case 2

PH: 91 years old female, Ex smoker

PC.: Two weeks pain, photophobia, itching and watering in both eyes, slight blurry vision

POH.: Advanced POAG.

PMH.: COPD, HTN, Cancer Colon, osteoarthritis, chronic kidney disease.

Current medications:

- Flouxetine capsules, statin, clopidogrel, salbutamol inhaler
- Lumigan ED
- Simbrinza ED

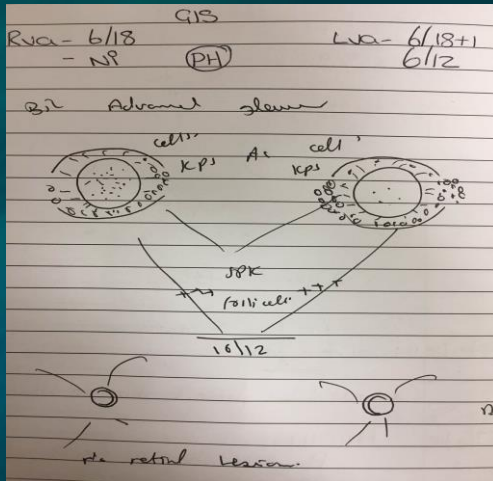
Allergies: Penicillin.

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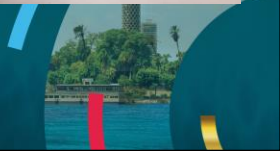


- Follicular conjunctivitis
- Keratitis
- Granulomatous Uveitis



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Management

- Stop All medication
- Preservative free tears substitutes
- Preservative free prostaglandins analogue,
- Topical PF steroid , Cyclopentolate
- Oral Acetazolamide 125 mg BD.

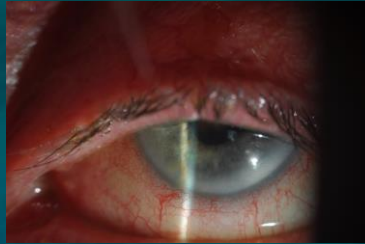
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Two weeks later

- Eyelid
- Cornea
- IOP: 20T20
- Bilateral MDLT



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Drops intolerance

- Ocular side effects to topical medications often affects the patient's adherence to medications .
 - Active ingredient
 - Preservatives
- This can lead to:
 - Progressive development of fibrosis
 - increases the risk of failure after glaucoma filtering surgery.

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Mechanisms of intolerance

1- Immunological (allergic) mechanisms

- Induced by a type I or IV hypersensitivity.
- Mostly in the early course of treatment
- Drug-induced allergy remains in most clinical trials a relatively rare situation.
- Some authors in a study found high rates of ocular allergy with a mean time of occurrence after the beginning of treatment of approximately 15 days.

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2-Toxic mechanism

- Direct action through different mechanisms such as:
 - Pure toxic effect,
 - pH acidity
 - Osmolarity of the solution.
- Indirect action through an alteration of the conjunctival microbial flora and / or the lacrimal secretion.

This will induce inflammatory reaction that will produce fibrosis in the long term.

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Preservatives

- Preservatives are present in numerous multidose eye drops and provide the sterility of the solution against bacteria and fungi.
- However, numerous studies have shown their toxicity for the ocular surface, particularly in long-term treatments.

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Types of preservatives

Chemical Class	Compounds	Commercial name
Quaternary ammoniums	Benzalkonium Chloride (BAK)	
	Cetrimide	
	Polyquaternium-1	Polyquad® - Alcon
Mercury derivatives	Thiomersal or thimerosal	
Oxidative complexes (Soft preservatives)	Sodium Perborate NaBO ₃	Gen Aqua® - Novartis
	S.O.C (Stabilized Oxychloro Complex)	Purite® - Allergan Ocupure® - AMO
	S.C.P (Stabilized Chlorite Peroxide)	Oxyd® - Tubilux
Amidines	Chlorhexidine	
Alcohols	Chlorobutanol	
	Phenylethanol	
Parabens	Methylparaben	

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BAC

The most widely used preservative in eye drops is benzalkonium chloride.

The prolonged administration of one or several eye drops containing preservatives induces changes in the superficial structures (conjunctiva, cornea) as well as in deeper structures (trabecula, lens).

Detergent, antiseptic, disinfectant, fungicide, bactericide

Pro-apoptotic,
Pro-inflammatory

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Take home message

- Appropriate and early detection of intolerance to medications is mandatory to adjust management strategies accordingly.
- Ideally, preservative-free eye drops should be recommended, or at least a reduction of the number of instilled preserved eye drops should be considered.
- All these strategies could increase patient comfort, quality of life, and compliance, with better outcome at the time of filtering surgery.

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