

"DRUGS AND THE EYE"

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OBJECTIVES

- § The use of drugs to facilitate an eye examination (Diagnostic Drugs)
- § The use of therapeutic drugs
- § Ocular complications of eye drops and systemic drugs
- § Systemic effect of topical ophthalmic drugs

DIAGNOSTIC DRUGS

Fluorescein

- § water soluble dye
- § stains damaged epithelium
- § remove soft contact lenses

DIAGNOSTIC DRUGS

Topical Anesthetics

- § Proparacaine hydrochloride 0.5%
- § Tetracaine hydrochloride 0.5%
- Almost immediate action facilitates examination

TOPICAL ANESTHETICS

- § rarely produce local or systemic allergy
- § never prescribe these drugs
- § corneal toxicity can lead to corneal ulceration and permanent scarring

DIAGNOSTIC DRUGS

Mydriatics

Cholinergic blocking - paralyse iris sphincter and ciliary body muscles

Tropicamide, Cyclopentolate Hydrochloride, Homatropine, Atropine, Scopolamine (Cycloplegics)

MYDRIATICS

Tropicamide (most popular)

- § rapid onset and short duration
- § maximum dilation at 30 minutes
- § duration 4 - 5 hours
- § rare reactions - nausea, vomiting, pallor and vasomotor collapse

MYDRIATICS

Adrenergics - stimulating (sympathomimetic drugs, stimulate the pupillator dilator muscle)

- Phenylephrine Hydrochloride

MYDRIATICS

§ Tropicamide + Phenylephrine for best results for examination

THERAPEUTIC DRUGS

Ocular Decongestants - over the counter purchase; whiten conjunctiva through vasodilator effect; purchased in high volume

- Naphazoline hydrochloride (Naphcon, Vasocon, Albalon)
- Phenylephrine hydrochloride 0.12% (Preferin, Zincfrin, Neo-Synephrine)
- Oxymetazoline (Ocular)
- Tetrahydrozoline hydrochloride (Murine, Visine)

Ocular Decongestants

§ overuse

§ rebound dilation

§ acute angle closure glaucoma (rare)

THERAPEUTIC DRUGS

Anti-Inflammatory Agents (Corticosteroids and Nonsteroidal Topical Preparations)

§ should not be prescribed by a primary care physician

§ serious side effects

- promote infections
- glaucoma
- cataracts

THERAPEUTIC DRUGS

Topical Antibiotics

- Sodium Sulfacetamide 10%, Erythromycin, Tobramycin, Gentamycin, Fluoroquinolones

ANTI-VIRALS

Patients should be examined by an ophthalmologist before considering topical antiviral therapy.

§ Idoxuridine (Herplex, Stoxil)

§ Vidarabine (Vira-A)

§ Triflurthymidine (Viroptic)

GLAUCOMA THERAPY

Beta-Adrenergic Blockers

(non-selective)

§ Timolol maleate (Timoptic)

§ Levobunolol hydrochloride (Betagan)

Timoptic and Betagan Side Effects

§ bronchospasm

§ cardiac failure

§ caution if patient is hypotensive or has bradycardia

BETA-ADRENERGIC BLOCKER (selective)

Betaxolol hydrochloride (Betoptic)

- \$ selective B-1 adrenergic antagonist
- \$ pulmonary effects have been described
- \$ weaker than Timoptic and Betagan

GLAUCOMA THERAPY

Cholinergic-Stimulating Drugs

Pilocarpine hydrochloride (IsoptoCarpine)

- \$ toxicity is rare
- \$ lacrimation, salivation, perspiration, nausea, vomiting, and diarrhea

CHOLINERGIC-STIMULATING DRUGS

Echothiophate (Phospholine Iodide) (Hardly every used)

- \$ anticholinesterase
- \$ side effects similar to pilocarpine
- \$ inactivates plasma cholinesterase
- \$ prolonged apnea with succinylcholine

ALPHA-2 ADRENORECEPTOR AGENT

- Topical brimonidine (Alphagan)
- Topical apraclonidine (Iopidine)

PROSTAGLANDIN ANALOG

- Topical Latanoprost (Xalatan)
- Topical Travoprost (Travatan)

CARBONIC ANHYDRASE INHIBITOR

- Oral acetazolamide (Diamox), methazolamide and dichlorohexamide
- Topical dorzolamide (Trusopt)

OCULAR SIDE EFFECTS OF SYSTEMIC DRUGS

CORTICOSTEROIDS

- \$ posterior subcapsular cataracts, glaucoma
- \$ asthmatic children, post renal transplant, rheumatoid arthritis

CHLOROQUINES

Chloroquine phosphate (Aralen)

Hydroxy-Chloroquine sulfate (Plaquenil)

- \$ corneal deposits (vortex keratopathy, glare and photophobia, regress when the drug is discontinued)
- \$ retinopathy
 - \$ slowly progressive and irreversible
 - \$ bull's eye maculopathy
 - \$ total dose of 300 grams of chloroquine phosphate
 - \$ visual acuity, colour vision, visual field, and ophthalmoscopic testing

DIGITALIS

- \$ blurred vision
- \$ abnormally coloured vision
- \$ objects appear yellow with overdose

DIPHENYLHYDANTOIN (DILANTIN)

- \$ horizontal nystagmus in lateral gaze
- \$ vertical nystagmus in up gaze
- \$ vertigo, ataxia, diplopia

ETHAMBUTOL

- \$ dose-related optic neuropathy
- \$ onset within one month of therapy
- \$ recovery unusual when drug stopped

AMIODARONE (CORDARONE)

- \$ corneal deposits (epithelium)
- \$ corneal endothelial deposits
- \$ retinal ganglion cell deposits

CHLORPROMAZINE

- \$ punctate corneal opacities
- \$ lens deposits
- \$ reversible

THIORIDAZINE

- \$ pigmentary retinopathy

\$ usually on 1,000 mg/day

IMPORTANT POINTS

- \$ Instill drops in lower fornix
- \$ Do not dilate with Atropine for diagnostic reasons only
- \$ Do not prescribe topical anesthetics
- \$ Do not prescribe topical steroids without a specific ocular diagnosis