Introduction

Many medications can cause side effects
- Certain
- Probable
- Possible
- Transient/ Reversible
- Irreversible Visual Loss

Allergy: Claritin & Zyrtec

- Uncommon
- Weak atropine-like action
  - Anisocoria
  - Decreased accommodation
  - Blurry vision
- Dry eye symptoms
- Contact lens intolerance
- Blepharospasm [large doses]

Cardiovascular: Amiodarone

- Common; dose-dependent
- Cornea (>70%)
  - Superficial punctate opacities
  - Decreased sensation
  - Whorl-like keratopathy
- Optic Neuritis (1.8%)
  - Insidious onset; reversible
  - Nerve edema: moderate visual loss
  - Risk factors: DM, HTN
  - Discontinue the drug!!
- Other
  - Lash loss
  - Yellow-brown conjunctival deposits
  - Lenticular opacities
  - Sensory defects: photophobia, blue-green halos, blurry vision

Cardiovascular: Anti-Anginal

- Agents
  - Nifedipine
  - Verapamil
  - diltiazem
- Nifedipine
  - Ocular pain
  - Rotary nystagmus
- Verapamil
  - Rotary nystagmus
- General side effects
  - Decreased vision
  - Photosensitivity
  - Visual hallucinations
  - Periorbital edema
  - Hemorrhages [anemia]
    - Conjunctival
    - Retinal
- Nitroglycerin rarely produces ocular side effects
### Cardiovascular: Digitalis

- **Common [13-25%]**
- **Blue-yellow color vision deficit***
- Early sign of toxicity
- **Abnormal visual sensations**
- **Scotomas**
- **Other**
  - Pain on eye movement
  - Corneal edema
- **100% reversible**

### Cardiovascular: Others

- **ACE inhibitors**
  - Angioneurotic edema
    - Usually in first few weeks
    - Most common drug
    - Overall incidence 1-2%
- **Beta-blockers**
  - Decrease tear secretion [sicca]
  - Decreased IOP
  - Change in vision
    - 5th most common complaint
- **Warfarin**
  - Uncommon
  - Can cause hemorrhage
  - [ARMD]
- **Niacin**
  - Cystoid macular edema
  - 3g/day
  - Most common in males
  - Reversible w/ stoppage of drug
  - Transient visual loss
  - Males more common

### CNS: Psychotropic Agents

- **Agents**
  - Chlorpromazine
  - Fluphenazine
  - Thioridazine
  - Prochlorperazine
- **General side effects**
  - Decreased vision
  - Color vision changes
  - Corneal deposits
  - Visual field defects
  - Cataract formation
  - Visual hallucinations
- **Chlorpromazine**
  - Most common: decrease vision
  - Pigmentary deposits
  - Lens and cornea
  - Most common drug
- **Thioridazine**
  - Retinal pigmentary change
    - Dose-related
    - "avoid bright lights"

### CNS: Anticonvulsants

- **Neurontin**
  - Visual disturbances
    - Occur early
    - Resolve with 2 weeks
    - Nystagmus, diplopia
  - Macular edema
  - Optic neuritis
- **Topamax**
  - Myopia
  - Eyel pain
  - Elevated IOP
    - Stop drug
- **Lamictal**
  - 40% of all side effects were ocular
    - 22%: diplopia
    - 15%: blurry vision
    - 5%: nystagmus
  - Other:
    - Retinal pigmentary change
    - Ptosis
    - Hallucinations

### CNS: Antidepressants

- **Prozac**
  - Blurry vision
  - Mydriasis
  - Photophobia
  - Sicca
  - Conjunctivitis
  - Diplopia
  - Increased eye movements during sleep
    - Persist for over 1 year after drug stopped
- **Zoloft**
  - Eye pain
  - Conjunctivitis
  - Near vision problems

### Dermatologic: Accutane

- **Dose-related**
- **Blepharoconjunctivitis**
- **Dry eye**
  - 20% contact lens intolerance
- **Transient blurry vision**
  - Decrease in night vision
    - May be permanent
- **Optic neuritis**
  - With concomitant tetracycline use
Endocrine: Synthroid

- Very common
- Dry eye
- Pseudotumor cerebri [children]
- Myasthenia-like picture [excess intake]
  - Ptosis
  - Diplopia
  - Extraocular muscle paralysis

Endocrine: Systemic steroids

- Most common
  - Posterior subcapsular cataracts
  - Increased intraocular pressure
- Other
  - Delayed healing
  - Decreased resistance to infection
  - Pseudotumor cerebri

Gastrointestinal: Prilosec

- Uncommon
  - Less than 1%
- Side effects
  - Visual hallucinations
  - Vertigo

Rheumatologic: Plaquenil

- Common
  - Corneal deposits
- Bull’s eye maculopathy
  - Parafoveal granularity of RPE
  - Attenuation of vessels
  - Blurry vision
  - Decreased color vision
- Recommendations
  - Exam, visual field testing yearly

AIDS-Related Agents

- Didanosine
  - RPE atrophy
  - Night blindness
  - Optic Neuritis

- Zidovudine
  - Macular edema
  - Hypertrichosis
  - Color vision abnormality
    - Overdose
  - Eyelid hyperpigmentation
  - Visual hallucinations
  - Nystagmus

Anti-TB: Ethambutol

- Incidence can be up to 20%
  - Higher in diabetic, renal, or older patients
- Onset after 2 months
- Side effects
  - Decrease in visual acuity
  - Color vision defects (green-red)
  - Optic neuritis
Neoplastic Agents: Tamoxifen
- Corneal opacity
  - Whorl-like deposits
- Retinal opacity
  - Refractile macular deposits
  - Macular edema
  - Hemorrhage
  - Optic nerve swelling
- Usually after 1 year of treatment (>100g)

Neoplastic Agents: Methotrexate
- Blepharitis
- Periorbital edema
- Increased tearing
- Conjunctival hyperemia

Neoplastic: Interferon
- Decreased vision
- Ocular pain
- Conjunctivitis
- Optic neuritis
- Retinal ischemia (=DM retinopathy)
***more evident in diabetics, hypertensives and at higher doses.

Neoplastic: Cyclophosphamamide
- Notorious for causing dry eyes

Hormone Replacement Therapy
- Dry eyes
  - Almost 70% increase with estrogen usage
- Contact lens intolerance
- Pseudotumor cerebri
  - rare

Herbal/Nutritional Supplements
- **Canthaxanthine**: Crystalline retinopathy
- **Chamomile**: Allergic conjunctivitis
- **Echinacea**: Conjunctivitis
- **Gingko biloba**: Spontaneous hyphema
- **Licorice**: Vasospasm; “migraine”
- **Vitamin A**: Pseudotumor cerebri
Viagra
- Blue-tinged peripheral vision
- Hypersensitivity to light
- Hazy vision
- Subconjunctival hemorrhage

***reversible
***3% of all patients (50g)

References
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  - Dr. Katherine Wang
  - http://www.opt.pacificu.edu
- Drug-related adverse effects
  - Dr. F.T. Fraunfelder
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