OCULAR SIDE-EFFECTS OF SYSTEMIC MEDICATIONS

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What’s New in Systemic Drug Effects and the Eye?

HEY DOC-EVERYTHING LOOKS BLUE!

• 71 Y/O male for general exam complains of occasional color disturbance associated with “migraine-like” HA
• Occurs X 2 months—”at night”
• No prior HX of vascular HA
• No decrease or loss in vision
• No hx TIA

Viagra-The Bad

• Has produced anterior ischemic neuropathy
• Has produced pupil-sparing third nerve palsy
• Associated with ocular vascular events
• Vascular adverse effects increase dramatically when used with nitrates

45 y/o mildly retarded male patient presents for general exam—Patient’s guardian says that medical panel requires patient to have an eye exam every 6 months because of his medications

The Breast Cancer Wonder Drug

• Reduces incidence of breast cancer by up to 75%
• Originally used in elderly, postmenopausal women to prevent recurrence of cancer
• Now in young women for prophylaxis
• Produces vision loss?
Tamoxifen
Maculopathy

- Occurs in 6% of patients within 6 months of low dose therapy (20mg/D)
- Reversible early, not reversible later
- White crystalline macular deposits
- Nobody knows about this

Patient Management

- Pre-TX baseline evaluation with emphasis on macular function and appearance
- Evaluate every 6 months thereafter or prn decrease in central acuity
- Also monitor for cataract

Xenical and the Eye

- Inhibits fat soluble vitamin absorption
- Vitamins A and E/ Antioxidants
- Increased risk of ARMD??/cataract
- Manufacturer suggests multivitamin supplement daily.
- ARED study proved that nutrition affects course of ARMD

The Desperate Contact Lens Patient

- Teenage girl-I will not wear glasses-Wants green, “30 day” lenses
- Acne
- Allergies-Penicillin/sulfa
- Asthma

Management?

- Fit with CL’s
- -What kind??
- Drug Side-effects?
- Treatment?

- PEH: Frequent “pink eye”
- Meds:
  Topical Benzoyl peroxide
  Accutane PO
  Ovral 28
  Visine 3-4 times daily
ACCUTANE USE = DRY EYE

EXTENDED WEAR CL’S?
NO WAY!!!

Cardiovascular Agents
- Diuretics
- Cardiac glycosides
- Nitrates
- Anti-Arrhythmics
- Ca++ channel blockers
- Beta-blockers
- ACE inhibitors

Cardiac Hemodynamics
- Contractility-Intropy
- Cardiac Output
- Peripheral resistance

Diuretics
- Lose salt and H2O
- Renal physiology
- Thiazide-Sulfa
- Loop = Potent
- K+ sparing
- CAI’s = Sulfa
- New CAI dose
- Osmotics = Sugar?
- Angle closure mechanism?

The Hallucinating Senior Citizen
- 72 y/o male - Visual disturbance
  “Lights look like covered in snow with halos”
- Vision getting blurry X 2 months
- Told by primary care doc to get new glasses

Therapeutic Index
LD50  Lethal Dose
ED50  Effective Dose

Low TI = Dangerous drug
High TI = Safe Drug
Anti-anginal Agents

- Nitrates
- Coronary artery dilators

Nitroglycerine can be deadly

- Nitro + the match = Bye Bye

THE CASE OF THE CLOUDED CORNEA

- 64 y/o male without complaints
- BVA: 20/25 OU
- Meds: Cholestyramine resin-Lipids
  - Niacin-Lipids
  - Cordarone-Arrhythmia
  - Lasix-Hypertension
- SLE: “Strange corneal deposits”

Watch for the anti-arrhythmic Agents

- All can produce reversible decrease in acuity
- Optic neuritis has occurred
- Permanent loss of vision with amiodarone

Adverse Effects

- Mydriasis
- Blurred Vision
- Night Blindness
- Decreased Color Vision
- Optic Neuritis
- Diplopia
- Verticillata

The Bespecled Bleeder

- 66 y/o white male
- Bloody OD discovered this AM
- Daily nose bleeds
- Bruises on arms X 2 weeks
- His eye doctor says that this is normal
If they like to drink, skip the Tylenol

- Acetaminophen contraindicated in alcoholics
- Can not exceed 4gm/day in normal adults
- Liver failure produces excessive bleeding

Clotting Tests

- APTT: Activated partial thromboplastin time-Monitor heparin and warfarin
- PT: Prothrombin time-Monitor Warfarin
- INR: Combination of both

Calcium Channel Blockers

- Mechanism-Vasodilation
- Multiple uses
- Value in low-tension GLC???
- Side-effects:
  - Amplify beta-blocker SE’s
  - Potentiate bleeding with ASA
  - Diltiazem and verapamil most common agents

Systemic Beta-Blockers

- Betaxolol
- Propranolol
- Timolol
- Carteolol
- Acetbutolol
- Atenolol
- Labetolol

Beta-Blocker Indications

- Hypertension
- Angina
- Arrhythmia
- Migraine
- Anxiety

Name 8 potentially fatal Beta-blocker Adverse Effects

- Adverse Effects
  1. Asthma
  2. Coronary insufficiency
  3. Heart block/arrhythmia
  4. Depression
  5. Diabetics
  6. Anaphylaxis reversal
  7. Lipid abnormality in coronary artery disease
  8. Impotence (just feel like you want to die)
On-going patient evaluation is critical

- 10% of patients have obvious contraindications to beta-blockers
- 12% of “normals” will develop significant side-effects that will require discontinuation of TX
- Good VS Bad side-effects

Very Popular for BP Control

- Slow the heart rate (Bradycardia)
- Dilate arteries-Lower BP/Decreased perfusion
- Reduced cardiac work load (Decreased cardiac output/ischemia)
- Decreased cardiac sensitivity (Heart block/1st/2nd, 3rd degree)
- P—QRS—T

Combining Topical Beta Blockers with Oral Beta Blockers

- Not a good idea
- Increase in side-effects
- More severe side-effects
- Less topical efficacy

Anti-Hypertensive Therapy

- Proper Staging
- Stepped Care
- Combination Therapy-Synergy
- Sound familiar to something else?

A.C.E. Inhibitors (NOT ACE VENTURA)

- Captopril
- Enalopril
- Lisinopril

ANTI-HYPERTENSIVES

Anti-adrenergics-act peripherally-reduction in peripheral resistance

- Reserpine
- Guanethidine
- Prazosin
Hyperlipidemia

Lipids:
• Cholesterol
• Triglycerides

Lipoproteins
• Chylomicrons
• VLDL, IDL, LDL, HDL

Anti-hyperlipidemic Agents

Bile Acid Sequestrants:
• Cholestyramine

HMG-CoA Reductase Inhibitors
• Lovastatin
• Pravastatin
• Simvastain

Cataracts???????????

Accelerated Lipid Metabolism

• Probucol
• Clofibrate
• Dextrothyroxine
• Gemfibrizol
• Nicotinic Acid

The Case of the “Sugar Free” Patient

• 67 Y/O male with a complaint of red, mildly tender OD X 3 D
• PEH: Occurred several times in the last 3 years. Tx’d successfully with eye drops from previous eye doctor
• Med Hx: Hypertension and Type II diabetes
• Meds: Diabenese, Lasix and Inderal

The Bad News

Three days later the patients internist calls and he’s as mad as hell. I quote “Are you trying to kill my patient”-End of quote.

Patient sent to hospital after collapsing with blood sugar of 30

WHAT HAPPENED?

Know Your Pharmacokinetics

• Oral hypoglycemics highly protein bound
• NSAID’s also highly protein bound
• Motrin displaces diabenese from protein binding sites.
• Diabenese travels to pancreas and stimulates extra insulin and results in drop of blood glucose
Diabetes and NSAIDS: More Bad News

• Prostaglandins produce vasodilation of afferent arterioles that supply the unit of the kidney, the nephron. Dilate afferent arteriole increase renal filtration.

• Nsaids produce constriction of afferent arteriole and compromise renal function.

• Deadly in diabetics