Ophthalmology Update for Primary Care Providers

Ziqiang Wu, MD
Ashley Vazeen, RN, BSN, Graduate FNP Student
Center for Advanced Eye Care
Carson City, NV
Screening for Common Causes of Vision Loss in the Asymptomatic Patient
The Top Causes of Irreversible Vision Loss Among Adults In the United States

1. Age-Related Macular Degeneration (AMD)
2. Glaucoma
3. Diabetic Retinopathy
What Do They Have in Common?

- Progressive
- Irreversible
- Prevented or slowed if detected early
- Cause severe vision loss
- Systemic associations
- No pain
- Very costly to manage, especially if discovered late
Symptoms to Observe

• Blurry Vision
  • Cataracts, macular degeneration, refractive error, cornea diseases, many retinal conditions, etc.

• Distortion
  • Macular degeneration, other macular conditions

• Loss of Peripheral Vision
  • Chronic – glaucoma
  • Acute – retinal detachment, retinal vascular disease, CVA

• Sudden vision loss
  • Vitreous hemorrhage from diabetic retinopathy, retinal vascular disease, bleeding from macular degeneration, angle closure glaucoma, etc.

* Acute symptoms should be referred immediately
But What About Asymptomatic Patients?

• Diabetes
  • Annual exam, more depending on exam findings
  • Severity of disease will correlate with
    • Duration of diabetes
    • Hemoglobin A1c
    • Systemic hypertension control
    • Lipid and cholesterol control
    • Kidney disease
Diabetic Retinopathy

- 50% diabetics are unaware of diagnosis
- 50% of known diabetics receive appropriate eye care
- 8000 eyes become blind each year in US
- Fortunately screening is getting better
  - PQRS
- Worsening diabetic retinopathy associated with progressing cataracts and risk of nerve palsies.
Macular Degeneration

- Macula = central vision
- Atrophic macular degeneration (non-exudative, dry AMD)
  - Most common initial presentation
  - Progressive
  - Geographic Atrophy – most severe form, especially if involving the fovea
  - Asymptomatic in mild to moderate stages
  - Currently no treatment to reverse disease
“Dry” Macular Degeneration
Geographic Atrophy
“Wet” Macular Degeneration

• Also known as “Exudative” AMD
• Abnormal neovascularization at the macula
• Macular edema, hemorrhage, scarring
• Usually occurs after pts have had dry AMD for a while
• Treated with intravitreal injections (Avastin, Lucentis, Eylea)
“Wet” Macular Degeneration
“Wet” Macular Degeneration
Prevention for Vision Loss from AMD

- Smoking cessation
- Blood pressure control
- Lipid/cholesterol control – role of statins
- Healthy diet
- Possible benefit to Omega-3 supplementation

TAKE CARE OF YOUR BODY. IT’S THE ONLY PLACE YOU HAVE TO LIVE IN.
Age Related Eye Disease Study

• Age-Related Eye Study I
  • Supplements of Vitamin A, C, E, Zinc, and Copper reduces the risk of vision loss by 25% over 5 years in patients with moderate to severe disease
  • No benefit in preventing onset of disease or slowing mild disease
  • Eye exams needed to stratify risk
  • Benefit even patients on daily multivitamins
  • Reduce the number of patient with vision loss of > 3 lines by 200,000 in five years

• Age-Related Eye Study II
  • Lutein and Zeaxanthin instead of Vitamin A/Beta carotene may be even more effective
  • Not contra-indicated in smokers
Systemic Associations

• Patients with AMD have
  • Higher risk of cardiovascular disease – similar risk factors
  • Higher prevalence of smoking
  • Higher morbidity from vision loss
  • Higher risk of depression from vision loss

• Treatment for AMD may be associated with
  • Higher risk of genitourinary tract disease from AREDS formula
  • Higher risk of thromboembolic events associated with intravitreal injections
Macular Degeneration — Prevalence*

• Geographic Atrophy or Neovascular Macular Degeneration
  • 1.47% of adults > 40 yrs old, 1.75 million
    • 100,000 currently legally blind
  • Increase to 2.95 million by year 2020
  • 15% of Caucasian women > 80 yrs old

• Candidates for AREDS supplementation
  • 7 million asymptomatic patients

Who Should Get Screening Exams for AMD?

- High risk individuals
  - Family history
  - Older than 55
  - Patients with cardiovascular disease/hyperlipidemia
  - Smokers
  - Caucasian race, blue eyes, light skin/iris pigmentation
Benefit for Screening

• Reduce the number of patients with vision loss – medical and emotional benefits
• Indirect cost due to decreased work productivity
• Cost of taking care of blind patients (driving, reading, other ADLs)
• Some of those injections for wet AMD costs $2000 every month!!!! (AREDS I costs less than $140 a year)
Glaucoma

• Damage to Optic Nerve
• Typically causes peripheral vision loss first
• Asymptomatic in early stages

• Forms
  • Open Angle Glaucoma – most common in African Americans
  • Narrow Angle Glaucoma – most common in Asians
  • Secondary Glaucoma – multiple associations
  • Classification requires eye exam
Glaucoma

Optic nerve head cupping progression

0.3 c/d  0.6 c/d  0.95 c/d
Glaucoma

- It’s not always easy to diagnose glaucoma
  - Cupping does not always mean glaucoma
  - Large cups may not be glaucomatous, and vice versa
  - High intraocular pressure (IOP) does not always lead to glaucoma
  - Many patients with glaucoma have normal IOP – Normal Tension Glaucoma
  - Other causes of optic nerve damage
  - Many forms of glaucoma require different treatments
Glaucoma Risk Factors

- Race
- Age
- Gender – more common in women
- Family history
- Systemic disease (e.g. HTN, some autoimmune diseases)
- Steroid use
- Many others
Glaucoma – Systemic Associations

- Sleep Apnea
- COPD and other severe respiratory diseases
- Cardiovascular diseases
- Hypothyroidism
- Visual migraines
- Nocturnal hypotension
- H. pylori
- Many others
Glaucoma -- Prevalence

- 2.5 million in U.S.
- Approximately half are not diagnosed (Glaucoma Research Foundation)
- Age, ethnicity, sex dependent
Glaucoma Prevalence*

*National Eye Institute
Glaucoma Treatment Goal: Lower IOP

- Systemic beta blockers may lower IOP
- Topical beta blockers may exacerbate asthma/COPD and bradycardia
- Topical alpha-agonists may cause drowsiness
Glaucoma – Preventing Vision Loss

- Early detection is key
  - Irreversible damage
  - Vision loss accelerates towards the end
- Treatment to lower IOP
- Mitigate risk factors (sleep apnea, respiratory diseases, etc.)
- Often chronic disease, but sometimes laser or cataract surgery alone can stop progression
If glaucoma is discovered too late

- Vision loss and lower quality of life
- May need costly surgery
- Surgery may have more complications → more costs
Who Should Get Screened?

• High risk individuals
  • African Americans, Hispanics, Asians
  • Elderly: 60 or above
  • Family history
  • Patients with systemic risk factors
  • Patients on chronic steroid use

• Patients with glaucoma should be examined for undetected risk factors
Costs to U.S. Health Care System

• AMD
  • Annual health care cost $98 Billion
    • Much of the cost is associated with intravitreal injection medications (Lucentis had sales of $4.2 B in 2013 alone, more than Januvia, Symbicort, Lipitor, Celebrex, Plavix and Cialis. Eylea had sales of $1.9 B.)

• Diabetic Retinopathy
  • Early detection and treatment saves $1.6 B in US each year (Lighthouse International)

• Glaucoma
  • $1.5 B cost to US government annually
Benign Essential Blepharospasm (BEB)

• Another Diagnosis that May be Identified During Vision Screening
What is Benign Essential Blepharospasm (BEB)?

• “Benign essential blepharospasm is a condition characterized by abnormal blinking or spasms of the eyelids. This condition is a type of dystonia, which is a group of movement disorders involving uncontrolled tensing of the muscles (muscle contractions), rhythmic shaking (tremors), and other involuntary movements. Benign essential blepharospasm is different from the common, temporary eyelid twitching that can be caused by fatigue, stress, or caffeine.”

U.S. National Library of Medicine, Genetics Home Reference, Benign Essential Blepharospasm, May 2010
Muscles of the Eye

“The orbicularis oculi muscles circle the eyes and are located just under the skin. Parts of this muscle act to open and close the eyelids and are important muscles in facial expression”
Signs and Symptoms

• “The first symptoms include an increased frequency of blinking, dry eyes, and eye irritation that is aggravated by wind, air pollution, sunlight, and other irritants.
• Symptoms appear in mid- to late adulthood and gradually worsen.
• These symptoms may begin in one eye, but they ultimately affect both eyes.
• As the condition progresses, spasms of the muscles surrounding the eyes cause involuntary winking or squinting. Affected individuals have increasing difficulty keeping their eyes open, which can lead to severe vision impairment.”
The Problem

• There is an insufficient number of Ophthalmologists and long wait times for appointments

• Primary Care Providers typically see these patients first, but they have more complex issues to address

• "Benign" indicates the condition is not life threatening, and "essential" is a medical term meaning "of unknown cause". Therefore, these patients can be seen by Nurse Practitioners.
Brief Literature Review

- BEB is a diagnosis of exclusion
- Diagnosis is commonly either missed or delayed by four to ten years
- The range of possible symptoms can obfuscate the appropriate diagnosis
- Mean age onset is 56 years, two thirds of patients are age 60 years or older
- With a female preponderance ratio of 1.8:1
Epidemiology

United States

• “It is estimated that there are at least 50,000 cases of blepharospasm in the United States, with up to 2000 new cases diagnosed annually. The prevalence of blepharospasm in the general population is approximately 5 in 100,000.”

Benign Essential Blepharospasm, Graham, Oct. 2014
Epidemiology Continued

Mortality/Morbidity

• “At one end of the clinical spectrum, essential blepharospasm is manifested by simple increased blink rate and intermittent eyelid spasms, while at the other end of the spectrum, blepharospasm is a disabling condition with ocular pain and functional blindness. Patients may report that they are disabled to the point where they have stopped watching television, reading, driving, and/or walking. Patients may develop anxiety, avoid social contact, become depressed, become occupationally disabled, and become suicidal.”

Benign Essential Blepharospasm, Graham, Oct. 2014
Epidemiology Continued

• It is more prevalent in dry climates as the disease is aggravated by low humidity and brightness

• National Organizations: Benign Essential Blepharospasm Research Foundation, Dystonia Medical Research Foundation, and The National Institute of Neurological Disorders and Stroke

• Local Support groups: Norma Gittelman is the Nevada state coordinator for the blepharospasm support group, 21 members in Las Vegas and 12 members in the Reno/Carson area (visit http://www.blepharospasm.org/ for additional resources)

• The practice that I am presently employed in is treating at least five patients with this diagnosis

(Benign Essential Blepharospasm Research Foundation, 2012)
How would this benefit providers?

- Increase knowledge level on the identification, management, and treatment of BEB
- Easily treatable
- Greater benefit to patient in terms of quality of life
- Low learning curve
- Low overhead, many primary care providers are already doing Botox injections, so the procedure can be easily incorporated into their practice
- New source of revenue
Procedure

- Educate/understand difference between blepharospasm (bilateral lids) and hemifacial spasm (unilateral, involving the face/cheek/jaw)
- Examine the patient and evaluate for dry eyes by symptoms and risk factors (Diabetes, Lupus, Sjogrens, Rheumatoid Arthritis, Post-Menopausal women, Hypothyroid, Medications)
- If the patient has dry eyes, treat with over-the-counter artificial tears
- If after treatment with tears symptoms still persist, then begin treatment with Botulinum toxin which is an approved treatment for blepharospasm in the United States and Canada.
Procedure Continued

• “Minute doses of botulinum toxin are injected intramuscularly into several sites above and below the eyes. The sites of the injection will vary slightly from patient to patient and according to physician preference.

• They are usually given on the eyelid, the brow, and the muscles under the lower lid. The injections are carried out with a very fine needle. Benefits begin in 1 - 14 days after the treatment and last for an average of three to four months.

• Long-term follow-up studies have shown it to be a very safe and effective treatment, with up to 90 percent of patients obtaining almost complete relief of their blepharospasm.”

Benign Essential Blepharospasm Research Foundation, 2012
“Chemodenervation is a term frequently used to describe the use of botulinum toxin to treat various forms of neurological conditions” Longstreetclinic.com

“A technique in which a pharmacologic compound (e.g. atropine, botulinum toxin) is used to paralyze a muscle or group of muscles. This technique is most often used in the treatment of certain forms of strabismus as well as blepharospasm.” Medical Dictionary
Summary

• Asymptomatic patients currently do not receive sufficient screening eye exams.

• Early treatment of macular degeneration, glaucoma, and diabetic retinopathy will result in significant reduction in visual loss and in health care expenditure over time.

• BEB is easily treatable, has a low-learning curve, provides greater benefit to patient in terms of quality of life, and increases revenue with low overhead.

• Diagnosis of these conditions may lead to discovery of undiagnosed systemic condition
Questions?
Works Cited


Works Cited Continued


