Blindness 501: Low Vision Rehabilitation

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Low Vision Rehabilitation Services

Outline

• Definition of Low Vision
• Need for Low Vision Care
• Special Diagnostic Procedures for Low Vision
• Treatment Tools
• Case Report

Definition: Low Vision

• WHO: <20/60 to LP, FOV <10 degrees
  (WHO Bangkok, 1992)
• Medicare: BCVA <20/60 in the better seeing eye or:
  – 368.41 Scotoma Involving Central Area
  – 368.45 Generalized Contraction or Constriction
  – 368.46/368.47 Homonymous/Heteronymous Bilateral Field Defect

Prevalence

Study by the Eye Disease Prevalence Research Group found:
– 3.3 million in the U.S.
– 1 in 28 Americans over 40 have low vision
– Expected to reach 5.5 million by 2020

Prevalence Cont’d

• Study also found:
  – 69% older than 80
  – 25% older than 75
  – 17% between 65 and 74
  – 15% between 45 and 64.

Legal Blindness: US Definition

• <20/200 BCVA or FOV <20 degrees in the better seeing eye

**Special Diagnostic Procedures for Low Vision**
- Eye Movement Analysis
- Special Refraction Techniques
- Fundus Imaging

**Eye Tracking Devices**

**Refraction**
- Retinoscopy
- R/G Sphere Check
- JND
- Stenopaic Slit
- Trial Frame
- Aberrometry

- Can Explain Reduced Contrast

**Aberrometry**

**Ocular Health Evaluation**
- Not Usually Done in a Low Vision Consult

**Macular Degeneration**

Normal Posterior Pole
Treatment Tools

- Telescopes
- Magnifiers
- Contact Lenses
- Filters
- Lighting
- Prisms
- Therapy

VES Bioptic Telescopes

4x Designs for Vision Expanded Field
BITA Miniature Telescopes

Hand Held Telescopes

Clearimage II Spectacle Microscope

Power Mag Stand Magnifier with Halogen LED

NOIR and Corning Filters

Topaz 21-inch LCD CCTV
Prisms for Strabismus

Franklin Split for Gaze Palsy

Visual Field Expanders for Tunnel Vision

Visual Field Awareness System (VFAS)

Combines the benefit of Visual Scanning Training (VST) and the neurological benefits of prism

VFAS
**EP Peripheral Exotropia System**

Creates a constant peripheral exotropia with resultant crossed diplopia.

Patient sees a ghost-like translucent image of the unseen field in the peripheral vision.

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**Digital Field Expanders**

Eli Peli, OD with his digital visual field expander. Dr. Peli is a researcher at the Scheie's Eye Institute and Professor of Optometry at Harvard and the New England College of Optometry.

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**Inwave Channel Lens**

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**Yoked Prism**

- Shift the entire visual field toward the apex (thin side).
- Improves mobility by making the floor more visible.

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**Neurological Effects of Prism**

- 30 articles have been published on the use of yoked prism for visual impairment secondary to brain injury since 2000.

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**Central Scotoma**
**Eccentric Viewing Training**

![Eccentric Viewing](image)

**Oculomotor Training: Electronic Brock String**

![Oculomotor Training](image)

**Oculomotor Training: Saccadic Fixator**

![Oculomotor Fixation](image)

**Driver Rehabilitation**

- 20/200 Best Glasses and 20/40 through the Biopic
- The maximum magnification is 4x
- The visual field requirement is 120 degrees
- No other physical impairments that interfere with driving

**Driving Rehab**

- Must complete the training and pass the driving test
- Must continue to have vision checked annually and a report sent to the Bureau of Motor Vehicles
- The license must be renewed every four years.
Cost/Time Driving Rehab

- Bioptic Telescope
  - Monocular: $1000-$2000
  - Binocular: $1000-3000
- 2 Training Sessions: $150
- Driving Rehab Specialist 30 hrs minimum
  Behind-the-wheel Training $3000-$4000

Consultation Report 1: Case History

- A 35 year old African American female
- Difficulty with her peripheral vision that started about 10 years ago
- Fatigue, achiness around the eyes, waves of light in the vision, and difficulty reading
- Family Hx of Lupus, Sarcoid, Rheumatoid

Consultation Report 1: Patient Goals

- Trouble Driving to Work
- Trouble Seeing at Night
- Would like to keep employment as Pet Hotel Employee

Consultation Report 1: Preliminary Tests

- Acuity 20/20-1 OD with -3.75 -1.50 x 027 and 20/20 OS with -4.25 -1.50 x 175.
- Color Vision 8/8 plates correct
- Stereo 40 seconds of arc
- Cover/Uncover Normal Eye Alignment
- 39/120 points were seen OD and 32/120 OS with a 20 degree field centrally on 120-point testing

Consultation Report 1: Slit Lamp Exam

- Slit lamp exam showed normal anterior segment structures including lids, lashes, lacrimal apparatus, cornea, and anterior chamber.
- Goldmann tonometry 20mmHg@2:04pm in the right eye 20mmHg@2:04pm in the left eye.

Consultation Report 1: Fundus Exam

- Lenses Clear
- Vitreous Cells/Pigment OU
- Waxy optic nerve pallor, CD 0.3OD, 0.2OS
- A/V Narrowing OU
- Macula with Glossy Appearance OU
- Trace Peripheral Pigment OU
Consultation Report 1: Primary Diagnosis

- Retinitis Pigmentosa Sine Pigmento

Consultation Report: Visually Impaired?

- Visual acuity 20/20

- Not Visually Impaired?

Consultation Report 1: Additional Testing

- The patient went to Emory for an ERG/EOG which was positive for RP with reduced amplitude
- Referral to Voc Rehab to assist in getting funding for the optical aids and training.