The Face of Vision Rehabilitation - What is the Current Status

Panel
Dr. Eric Ikeda - neuro optometric rehabilitation
Dr. Janis Winters – low vision rehabilitation
Moderator
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Neuro Optometric Rehabilitation

Where are we now? Where do we hope to be?

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5 WAYS TO OFFER NEURO-OPTOMETRIC SERVICES IN YOUR PRACTICE

Objectives

- Present common assessment strategies
- Discuss mild & complex cases
- Determine when it is appropriate to refer for advanced care: Primary eye care vs referral for neuro optometric consultation
- "know your limitations" or better, how to improve your skills
- Communicating with and working within the rehabilitation team

Vision

- A significant, but frequently overlooked link in rehabilitation
- Physical and speech deficits overt
- Vision deficits overt or covert
- e.g. reduced visual acuity understood, but not vision

Leading Causes of Traumatic Brain Injury

- Falls 28%
- Motor Vehicle Accidents 20%
- Assaults 11%
- Other / Unknown 22%
TBI Consequences

- Physical
  - Headaches
  - Balance difficulties
  - Double vision
  - Paralysis

- Cognitive
  - Short term memory loss
  - Slow information processing
  - Difficulty multi tasking
  - Difficulty with visual spatial orientation & organization

- Emotional
  - Depression
  - Anxiety
  - Denial

What to expect...

- Referral to your practice for “vision consultation” to evaluate:
  - Reduced VA (distance and/or near)
  - Poor “tracking”, saccades
  - Reduced depth perception
  - Reduced peripheral field
  - Reduced visual perceptual skills

Examination strategy

- Comprehensive vision examination
  - Case history, goals
  - Visual acuities
  - Refraction
  - Binocular testing (fusion)
  - Cover testing
  - NPC
  - Pupils
  - Visual fields
  - Ocular health (IOP, SLE, DFE)

- Supplemental testing to screen or determine if a deficit exists for referral
  - Visual midline
  - Visual spatial
  - Motor (screen for retained primitive reflexes)
  - Auditory visual motor (IM)

Simple/mild case

- KA, 15 yo female, s/p concussion; referred by a primary care optometrist, colleague, father; evaluated by Pediatrician/Sports Medicine

Complex case

- SS, 34 yo female Olympic volleyball player who sustained a traumatic brain injury in Brazil that resulted from an accident while she was traveling as an unrestrained passenger on a team bus on 4/12/2011
  - Reports that she is aware of her visual deficit and that she must continually scan her environment and remain vigilant in her scanning to maintain safety and situational awareness.
  - SS reports that she continues to have difficulty with reading; headaches have resolved (premorbid hx of migraines); no falls, memory has improved, tries to cope with her deficits.
  - Reports that in practice, she sometimes tends to miss the balls, had been hit in the face.

In patient consultation

- Bedside assessment
  - History; chart review
  - Visual acuities: ~20/20 each eye
  - Ocular motilities: full & symmetric
  - Confrontation fields revealed a right field cut
  - PERRLA (-APD)
  - External/Internal ocular health unremarkable
In-Patient therapy recommendations
- Directed therapy activities in occupational and physical therapy
- Scanning (static and dynamic)
- Dynavision
- Yoked prism (field expansion vs disruption of performance)

Vision Therapy (collaboration w/ OT service)
- Bean bag toss back/Balance board
- Wayne Saccadic Fixator
- Yoked prism (dynamic)
- Visual spatial concepts, rather than simply increasing awareness of the affected field
- Collaboration with trainer
  - Trainer had regularly attended SS’s therapy sessions
  - Input on skill level, feedback on current level of compensation

Current Status
- SS continues to drive and live independently, and practice with the team, but did not achieve her goal of qualifying to travel with her US Volleyball team
- She was asked to rejoin/play for the Brazilian team.
- Although SS was urged to continue her therapy, she chose to rejoin team Brazil and promised to return to complete her therapy and was instructed to return for periodic monitoring of her progress
- Latest news: retired from Volleyball (2013)

The rehabilitation team
- Nurse Case Manager
- Neurologist
- Physical Medicine & Rehabilitation Physician
- Occupational Therapist
- Physical Therapist
- Speech Therapist
- Chiropractor
- Dentist
- Attorney

When to refer
- “know your limitations”
  - e.g. addressing strabismus, visual spatial deficits, visual motor perceptual
- Learn more and develop your skills
  - AOA VRC
  - COVD, NORA, OEP
Collaboration Between Occupational Therapy and Neuro-Optometry

Best practice:
- OT identifies vision impairments affecting function
- OT shares results and affects on function with OD
- OD assesses patient and assists with treatment plan
  - Lenses, prisms, occlusion strategy, filters
  - Assists OT with treatment planning, identifying areas to address in treatment
- Follow up as needed
- Vision is dynamic and should be changing!
- Need for update and continued collaboration

The Future for Optometry

- Coordinated research with colleagues and other rehabilitation professions of TBI clinics and hospitals to develop fast and effective means of evaluating and treating TBI
- Further collaboration with the rehabilitation team using evidence-based treatment to improve outcomes

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Low Vision Rehabilitation Present Trends

- Advancement in technology of low vision devices
- Tablet and smart phones
- Computer
- Head mounted instruments
- Low vision and technology
- Shift toward multi-disciplinary approach
- Implantable miniature telescopes
- Retinal implants

Disclosure

- None

Advancement in technology of low vision devices

- Electronic magnification
- Optical Character Recognition
Smartphones and Tablet
- Iphone
- Android
- Settings, Accessibility, Vision
- Font and screen zoom
- Screen reader
- High contrast fonts
- High contrast keyboard
- Color adjustment
- Etc
- Siri
- Bixby

Iphone and Android Smartphones and Tablets
- Apps
- Magnifier
- Be My Eyes
- KNFB reader
- Seeing AI
- TapTapSee

Apple Communities

Smart TV
- Samsung TV
- LG TV

Streaming
- Apple TV
- Roku

Audio Descriptive Video
- American Council of the Blind
- Legally available
- https://www.acb.org/adp/master-ad.html
Computer
- Microsoft 10

Computer
- JAWS

Computer
- Mac

Head mounted instruments
- Iris vision
- Jordy

Head mounted instruments
- eSight
- Or-Cam

Low vision and Technology
- Digital assistants
  - Apple Siri
  - iPhone, mac, watch, homepod
  - Amazon Alexa
  - Google Home
- Tell me about my day.
- How do I cook a dish?
- Smart home
  - More than 1000 devices
Services Not Just for the Visually Impaired

- Restaurant and cook at home delivery services
- Online grocery delivery services

Multi-discipline approach

- Occupational Therapists
- Orientation & Mobility Specialists
- Vision Rehabilitation Therapist
- Teacher of Students with Vision Impairment
- Social Worker

Implantable miniature telescope

- Advanced ARMD
- Implanted monocularly
- 2.2x - 3.0x
- Cataract (unilateral)
- 5 letter VA improvement with external telescope
- Adequate peripheral vision in fellow eye
- Postop training program
- Outcomes BCDVA QoL
- Randomized trial in process
- Cost

Retina Implant

- Alpha AMS
- Subretinal space
- End-stage retinitis pigmentosa
- Argus II

Summary

- Technology
  - Developed for sighted as well as visually impaired
- Task/goal oriented
- Treatments
  - ARMD, RP