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Session 206: Visual Rehab after a Neurological Event: What Every Therapist Needs to Know
Michelle Mioduszewski, MS, OTR/L

Financial: Michelle Mioduszewski is the owner of Niagara Therapy, LLC. She receives a speaking honorarium from PESI, Inc.
Non-financial: Michelle Mioduszewski is the AOTA Administration and Management Chairperson for the Rehabilitation and Disability Special Interest Section; and the National MS Society Board of Trustees.

COURSE DESCRIPTION
• Get the 101 for a vision screen after a stroke or brain injury for Os, Pts and ILPs. Visual impairments will be explored as well as their impact on function. This course will provide the participant all the tools to screen for visual attention, field loss, and neglect/visual inattention. Lecture and demonstration will show how to make efficient use of time while gathering critical data to influence your care plan. Visual clinic models will be discussed and how this can work in your setting.
COURSE OBJECTIVES

1. Articulate the basics of the neurological vision rehab and process
2. Articulate the understanding of visual attention, field loss, and visual inattention
3. Demonstrate how to assess and understand the difference between field loss and visual inattention

Rehab process
Define the impairment
Assess the impairment
Treatment of the impairment
Case Study
Questions

STROKE-BRAIN INJURY-CONCUSSION

Two main types of stroke: ischemic, due to lack of blood flow, and hemorrhagic, due to bleeding—result in part of the brain not functioning properly.
Signs and symptoms of a stroke may include an inability to move or feel on one side of the body, problems understanding or speaking, feeling like the world is spinning, or loss of vision to one side.
Traumatic brain injury (TBI) = intracranial injury, occurs when an external force injures the brain.
Concussion = mild traumatic brain injury (mTBI) with symptoms may include headaches, trouble with thinking, memory or concentration, nausea, blurry vision, sleep disturbances, or mood changes. ~20,000 people under age 19 were treated in hospital emergency rooms for concussions related to sports and recreation activities per year in the US
VISION

- Integral for most daily tasks
  - Reading, writing/completing forms, shopping, mobility, dressing, leisure, etc.
- Post neurological event, there is significant concern about the lack or limited effort put toward the visual assessment
  - Patients fail to report the visual impairment due to limited cognition and confusion
  - Patients can be labeled as confused, anxious, incooperative, clumsy or uncooperative but have an underlying visual impairment
  - Ignoring vision deficits causes invalid assessment and faulty clinical reasoning that creating ineffective treatments, limited results for patient progress, and frustration for all involved

- Vision Deficits

RED FLAGS OF POSSIBLE VISION PROBLEMS

- Headache with reading, close work, board work, computer use...
- Closing one eye
- Taking longer to read or not understanding content
- Missing objects, bumping into objects, clumsy
- Asymmetrical appearance
Process

Interview/History
Initial Assessment
Consult - Review and record findings
Develop a plan
Implementation
They happy and satisfied! Now go!

Set the Stage...Anatomy and Structure

Set

Set

Set

Set

Set

Set

Set

Set

Set

Set

Set

Set
**Visual Fixation**

- Maturity by 4 weeks
- Sustaining attention with ocular motor stabilization
- Mild traumatic brain injury and post traumatic stress disorder create the perfect storm for less efficient performance due to impaired visual attention.
- No formal testing
- Monitor focus of task and visual attention
- Vision, Barlow

**Visual Fixation Treatment**

- Letter/picture identification
- Attention cognitive tasks
- Simple puzzles
- Use of mirrors
- Dark rooms and flashlights/lasers
- Advanced Tech Options
- PPP
ADVANCED TECH OPTIONS FOR VISUAL REHAB

And the cost effective alternative!

Dynavision
- Semi mobile
- Stationary lights
- Stores Patient Data
- Larger screen
- One color lights
- No letters or numbers on lights but center window options
- [Link to Dynavision Video]

Saccadic Fixator
- Smallest unit
- Semi mobile
- Stationary lights
- Does not store patient data
- One color lights
- No numbers or letters
- [Link to Saccadic Fixator Video]
VISION COACH

- Not mobile
- Stationary lights
- Does not save patient data
- Has 2 color lights
- Has stationary letters and numbers
- [Link to vision.coach]

BITS

- Semi mobile
- Includes a balance board with vestibular training
- Unlimited color and number options
- MULTIPLE PROGRAMS
- Interactive
- Touch screen

SANET VISION INTEGRATOR

- Semi mobile
- Includes a balance board with vestibular training
- Unlimited color and number options
- MULTIPLE PROGRAMS
- Interactive
- Touch screen
POOR-MAN’S POKER PRESCRIPTION (PPP)

Alternative and supplement to the advanced tech options.
- Sticky Tac items to the wall
- Sticky notes
- Playing cards
- Parquetry/blocks/pictures
- Scatter on the wall
- Can be done in the home/acute/precaution rooms/HEP
- Use with cognitive loading
  - Numbers
  - Letters
  - Game with cards

**VISUAL FIELD LOSS**

Homonymous quadrantanopia, homonymous hemianopia, field cut
**VISUAL FIELD LOSS**

- Scope of vision is cut
- Sensory based impairment (not perceptual)
- Compensate extremely well! *Driving Restrictions* See state DMV*
- Bumping into things, turning of the head to see, slow reading, missing details only on one side...

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**RESEARCH SHOWS...**

- 8-25% of individuals with a stroke have a field loss
- Therapy provides clinical improvement in reading speed, eye movement, and visual field perimetry
Dividing the eye into quadrants
The nose must be considered in the nasal field of vision

Look for ID of target in the four fields
Extra person has to sit across from patient
Come in from each corner toward the patient midline
TEST: CONFRONTATION TEST

Eye midline, Monocular, Eye confrontation counts

Target at 20" and set in the quadrant

Provide a singular stimulus. Move arms together.

Looking for attention to stimulus

VISUAL FIELD LOSS TREATMENT

• GOAL:
  • Improve effective and efficient compensation
  • Improve effective and efficient eye movement
  • Change the amount of field cut but improve functionally

• EDUCATE the patient for safety
  • Auditory/Tactile cues for eye movement not head movement
  • Block/peg/parity chart/number puzzles with integration into functional task
  • Advanced Options and PPP
  • HART, Braille reading
MM30 add info about driving
Michelle Mioduszewski, 6/27/2018
VISUAL FIELD LOSS TREATMENT

- "I Spy"
- Flashlight tag
- Scavenger hunts
- Higher cognitive challenge during ambulation
- Move eyes not head to see things
- Especially during ambulation
- Search for objects or room numbers
- PPP-when walking
- Maneuver through crowded places
- In crowded or loud environments have "date" on loss side

VISUAL FIELD LOSS TREATMENT-READING

- Reading with triggers or anchors
- Use highlighting on edge
- Use post-its
- Use binding
- Reading uphill
- Patient reads vertically to avoid loss
HEMI NEGLECT

Hemispatial inattention, neglect, visual spatial neglect, unispatial inattention

Simulating Visual Spatial Inattention

SIMULATION

Normal view

Neglect and anosognosia
Decrease awareness to one side
Can see things in both fields when presented in isolation but when presented together the patient will "ignore" one object.
With or without field cut
With or without field cut
Motor, sensory, or Memory

• Ipsilateral stimulus appears to extinguish perception of contralateral stimulus with double stimulus presentation (AKA: extinction)

Poor eye contact
DO NOT COMPENSATE WELL—poorer functional prognosis than field cut
Frequency is difficult to establish in research
**IMPACT OF NEGLECT ON MEMORY**

Visual Imagery and Hemispatial Neglect

Mental images from opposite sides of an imagined public landmark

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**LOOK TO THE LEFT OR RIGHT?**

What are you tired of saying?

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**WHY LEFT?**

- Right hemisphere can direct attention to both hemispaces
- Left hemisphere directs attention to right hemispaces
- Left neglect
  - *Right Neglect*
  - Less severe
  - Quicker to clear
TEST: SIMULTANEOUS STIMULUS TEST

Eye midline, Monocular, MUST have confirmed bilateral fields

Target at 20” and set in

Provide bilateral stimulus, Move arms together

WHAT IF THERE IS A FIELD LOSS?

- DEMT (Developmental Eye Movement Test)
- BIT (Behavioral Inattention Test)
- Observation
- Line bi-section
- Clock or daisy drawing
- Cancel worksheets
- HART

LINE BI-SECTION

- Divide the lines
- Results for Neglect?
- Results for a Field Loss?
RESEARCH SHOWS…

- Neglect patients recover to a lesser extent as well as slower in time from either sensory-motor impairments, and/or limitations in basic activities of daily living (ADL), compared with non-neglect patients.

- Approaches best supported in research:
  - visual scanning treatment
  - limb activation therapy
  - “general treatment” or “perceptual training”

- Ifejika-Jones
- Nijboer

GOAL OF NEGLECT INTERVENTION

- Improve effective and efficient compensation
- Improve effective and efficient eye movement
- Change the amount of neglect
- Improve awareness
NEGLIGENCE TREATMENT CONCEPTS

EDUCATE THE FAMILY and the patient
Most effective if there is some awareness
Taping the glasses (after formal testing)
Dynamic stimuli to increase attention (lights, TV, noise...) on neglected side
During rests, position the patient with the stimulation on the neglected side
Promote eye movement not head movement

* Except in severe cases

NEGLIGENCE TREATMENT

- Block/peg/parquetry/tegogram puzzles
- Advanced Technology options
  - Can grade to standing on rocker board to incorporate balance and LE
  - PPP
  - Flashlight Tag
- Phone book/menu activities
- In patient's room when in hospital:
  - Put TV, cards, pictures on the neglected side
  - NEVER put the call bell on the neglected side

NEGLIGENCE TREATMENT

- Worksheets and HEP:
  - Follow the line/Maze
  - Connect the dot
  - Find the letter/word or word search
  - Remind for eye contact
  - Read maps
  - Singing to music sheets
  - Matching cards/Memory
  - Put the TV to the neglected side
  - Use colored line/post-it on books, magazines, newspaper
MARK
- 82 years old
- Severe CVA with Neglect and Pusher
- Transitioning from acute to extended care
- Very passionate about his grand kids
- Love to play golf
- Meeting is scheduled for family training

CASE STUDIES
- Family Report?
- Patient Report?
- Assessment tool?
- Positive results?
- Treatment Plan?

SUSAN
- 65 year-old who lives alone
- CVA
- Seen on the rehab unit
- Field loss
- Volunteers at the local library
CASE STUDIES

Family Report?

Positive results?

Treatment Plan?

Assessment tool?

Patient Report?

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Occupational, Physical and Speech Therapy for adults and children

THANK YOU!