PPPD: EARLY DETECTION AND INTEGRATIVE REHABILITATION THERAPY IMPROVES OUTCOMES

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HISTORY AND PATHOPHYSIOLOGY OF PERSISTENT POSTURAL PERCEPTUAL DIZZINESS

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Disclosures

• None
Objectives

• Familiarize yourself with the history of Persistent Postural Perceptual Dizziness (PPPD).
• Understand the pathogenesis of abnormal sensory weighting/dominance and/or autonomic nervous system maladaptation.
• Understand the definition and diagnostic criteria of PPPD
• Recognize key signs/risk factors for developing PPPD
• Apply new strategies to manage patients with PPPD to avoid common obstacles to recovery.
• Examine the role of communication, tone, and patient education when discussing recovery with patients with PPPD.
• Identify the core symptoms of anxiety related to vestibular disorders and describe evidence-based interventions for anxiety management in the vestibular population.
• Facilitate development of integrated treatment teams (vestibular rehabilitation specialists, vision therapists and rehabilitation psychologists) to address multiple symptoms in a coordinated treatment plan.
History

- 1870s three German physicians described syndromes of dizziness and discomfort in motion rich environments, accompanied by autonomic arousal, anxiety, and avoidance of provocative circumstances.

- 1970s small case series were published describing various syndromes of spatial disorientation and aberrant motion sensations including:
  - supermarket syndrome
  - Space phobia/agoraphobia
  - Motorists vestibular disorientation syndrome
  - Visually induced motion symptoms
  - Physiologic height vertigo
- Brandt and Dietrich: Phobic Postural Vertigo
- Jacob et al: Space Motion Discomfort
- Bronstein: Visual Vertigo
- Staab: Chronic Subjective Dizziness
- Committee for Classification of Vestibular Disorders
- Diagnostic Criteria for persistent postural perceptual dizziness published in Journal of Vestibular Research
Persistent Postural Perceptual Dizziness:

A common chronic dysfunction of the vestibular system and brain that produces persistent non-vertiginous dizziness, unsteadiness, and non-spinning vertigo that are exacerbated by postural challenges and perceptual sensitivity to space-motion stimuli.
Epidemiology

- UK: 4% of all patients registered with a general practitioner experience persistent symptoms of dizziness.
- UK neurology outpatient clinics: 2% of all secondary referrals were diagnosed primarily with vertigo or dizziness.
- Tertiary dizziness centers-PPPD is second most common diagnosis accounting for 15-20% of all patient presentations.
- Prospective studies of patients followed for 3-12 months after acute vestibular ailment suggest that PPPD will develop in 25% individuals.
Disease Burden

- There are more than 2 million U.S. emergency department (ED) visits annually for dizziness or vertigo, comprising roughly 4.4% of all ED chief symptoms in awake patients. (Newman-Toker)
- Patients with dizziness undergo more diagnostic tests and have greater lengths of stay (LOS) than those without dizziness, comparable to what is seen in those with chest pain.
- Resource use, particularly neuroimaging, is increasing over time.
- Total U.S. national costs for patients presenting with dizziness to the ED are substantial, estimated to now exceed $4 billion per year.
Distortion of Afferent Signals
“High Alert”

Perception of Dizziness and Unsteadiness

Trigger:
- Vestibular Crisis
- Concussion
- Panic Attack

Dizzy Experience

Acute Adaptation

Recovery

Neck Stiffness
Gait Disorder

Utilization of High Demand Postural Control Strategies

High Anxiety
Excessive Vigilance

Predisposing factors:
- Neurotic personality
- Pre-existing anxiety disorder
- History of Trauma

Limited knowledge
Threatening and provocative words
Internet
Medical Tests

Adapted from Stoyan Popkirov et al. Pract Neurol 2018;18:5-13
Louw and Puente.Dura 2013
Pathophysiology

• Three key mechanisms by which this disorder is thought to develop:

  1) Stiffened postural control
  2) Shift in processing spatial orientation information to favor visual over vestibular inputs
  3) Failure of higher cortical mechanisms to modulate the first two processes.
High Risk Postural Control Strategies
Secondary Functional Gait Abnormality

- Increased body sway and amplified compensatory movements of the arms during tests of stance (rombergs)
- Slow or hesitant gait and/or “walking on ice” pattern
- Slowness remains unchanged after gait initiation
- More demanding postural tasks such as standing in tandem position or walking backwards can normalize body sway and gait.
- Fail to return to normal relaxed postural control strategies following their use of high-threat postural responses (e.g., stiffening of stance) that are transiently activated during balance challenges.
CNS Control of Posture and Locomotion

Cortex
Awareness of Motion Stimuli
Conscious Control of Movement

Voluntary Locomotion and Oculomotor Control

Amygdala
Threat Evaluation

Autonomic Nuclei

Autonomic Responses

Sensory End Organs
Visual, Vestibular & Somatosensory Cues

Central Vestibular Processing
Multisensory Integration

Reflexive Postural and Oculomotor Control

RUSK REHABILITATION
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PPPD
DIAGNOSTIC CRITERIA FOR PERSISTENT POSTURAL PERCEPTUAL DIZZINESS

Artmis Youssefnia PT, CEEAA, CAPS

Board-Certified Clinical Specialist in Geriatric Physical Therapy (GCS)
Disclosures

None
Objectives

◆ Understand the definition and diagnostic criteria of Persistent Postural Perceptual Dizziness
◆ Recognize Key Signs/Risk Factors for developing Persistent Postural Perceptual Dizziness
Diagnostic Criteria as per International Classification of Vestibular Disorders (ICVD)

A. One or more symptoms of dizziness, unsteadiness, or non-spinning vertigo are present on most days for 3 months or more.
   1. Symptoms are persistent, but wax and wane.
   2. Symptoms tend to increase as the day progresses, but may not be active throughout the entire day.
   3. Momentary flares may occur spontaneously or with sudden movements.

B. Symptoms are present without specific provocation, but are exacerbated by:
   1. Upright posture,
   2. Active or passive motion without regard to direction or position, and
   3. Exposure to moving visual stimuli or complex visual patterns, although these three factors may not be equally provocative.
C. The disorder usually begins shortly after an event that causes acute vestibular symptoms or problems with balance, though less commonly, it develops slowly.

1. Precipitating events include acute, episodic, or chronic vestibular syndromes, other neurologic or medical illnesses, and psychological distress.

   a) When triggered by an acute or episodic precipitant, symptoms typically settle into the pattern of criterion A as the precipitant resolves, but may occur intermittently at first, and then consolidate into a persistent course.

   b) When triggered by a chronic precipitant, symptoms may develop slowly and worsen gradually.

D. Symptoms cause significant distress or functional impairment.

E. Symptoms are not better attributed to another disease or disorder.
Diagnostic Tree

ACUTE EVENT

PRECIPITATING FACTORS

PRESENT SYMPTOMS

PROVOCATIVE FACTORS

TIME: frequency/duration

Complete standard vestibular evaluation as per CPG

3PD

*Anxiety disorder
*Neurotic personality
*POTS
*Migraine
*h/o concussion or trauma
*Neuro-otologic event
*Medical event

*Dizziness
*Swaying/rocking or unsteadiness
*Hypersensitivity to motion stimuli
*Difficulty with precision visual tasks

*Upright posture
*Head or body motion
*Exposure to complex or motion rich environment
*Anxiety/Stress
*Medical Event
*Cumulative burden of activities

*15/30 days
*>3 months
3 Subtypes

1. Psychogenic PPPD is triggered by a psychiatric disorder, usually panic disorder in which panic attacks produce lightheadedness or vague vertiginous sensations.

2. Otogenic PPPD is caused by a vestibular dysfunction.

3. Interactive PPPD is also precipitated by an acute vestibular or medical condition but occurs in patients with preexisting anxiety.

- Regardless of subtype, PPPD almost always starts with an acute process
- According to diagnostic criteria: symptoms need to be present for greater than 3 months—early detection can help prevent prolonged recovery
Provocative Factors

1. a. Active or Passive Motion of self that is not related to a specific direction or position
   b. Upright Posture
2. Exposure to large-field moving visual stimuli or complex (fixed or moving) visual patterns.
3. Performance of small-field precision visual activities (ie reading, computer or fine motor tasks).
Yellow Flags

1. (+) Cumulative burden of activity
2. Symptoms resemble one or more 3PD diagnostic criteria and do not follow diagnostic criteria of another vestibular disorder
3. Acute event was not otogenic
4. History of concussion or trauma
5. History of migraines/headache
6. Panic Attacks
7. Anxiety: multisystem response to a perceived threat or danger (can utilize Generalized Anxiety Disorder-7 item scale)
8. Catastrophic tendencies: ruminating about irrational worst case outcomes
9. Hyper-vigilance: state of increased alertness
10. Increased stress or anxiety present at time of acute event (includes “happy” life events”)
Anxiety

CATASTROPHE
CUMULATIVE BURDEN OF SYMPTOMS: Increase in symptom intensity due to culmination of provocative activities throughout the day.
ONE OR MORE SYMPTOMS OF 3PD

1. **Dizziness**: non-motion sensations of disturbed or impaired spatial orientation
2. **Unsteadiness**: feelings of being unstable while standing or walking
3. **Internal non-vertiginous dizziness**: false or distorted sensations of swaying, rocking, bobbing, or bouncing of oneself
4. **External non-vertiginous dizziness**: similar sensations of movement of the surroundings

◆ Does not follow diagnostic criteria for another vestibular disorder
◆ If temporal pattern does not follow exact symptom chronology for 3PD (less than 3 months and is not 50% of the time) could still be 3PD.
ACUTE EVENT WAS NOT OTOGENIC

- Concussion
- Autonomic Disorder: POTS
- Surgery
- Kidney Failure
- Heart Failure
CONCUSSION, TRAUMA or MIGRAINE

1. Persisting subjective non-vertiginous dizziness and/or unsteadiness with upright posture.

2. Hypersensitivity to motion stimuli, including the patient’s own movement and motion of objects in the visual surround.

3. Difficulties with precision visual tasks.

If the patient fulfills ANY of the diagnostic criteria for 3PD then it should serve as another yellow flag!
TREATMENT STRATEGIES FOR PERSISTENT POSTURAL PERCEPTUAL DIZZINESS

Tara Denham MA, PT
Three types of referrals

Treatment from NYU PT
• Traditional VR therapy
• Unsuccessful

Treatment from outside PT
• General PT exercises
• Unsuccessful

No previous treatment
• Sedentary lifestyle
• Unsuccessful
Reasons Previous Treatments Unsuccessful

- Traditional VR therapy is not appropriate
- Need to switch approach
- If patient has normal DVA no reason to do X1 or X2 Viewing progressions
- Must have strategies to decrease anxiety
- Positive reinforcement
- Need to set patients up for success
Evaluate

- 2 minute walk test
- Motion sensitivity (MSQ)
- Activities patients are avoiding
- GAD - 7
- Don’t ask how is your dizziness (0-10)
General Rules

- Symptoms should return to baseline 15-20 minutes
- Split up exercises into manageable components if needed
- Perform standing rest breaks
- Several short shopping trips better than long
- Any activity that increases symptoms can be an habituation exercise
Pacing

- Gentle approach in the beginning
- Build trust that exercise are not harmful
- Increase intensity gradually
- Daily exercise plan overcomes instinct to avoid activity
- Schedule breaks
Persistence/ Visual flow and complexity

- **Persistance**
  - Habituation may take more time than the compensation process for a UVL
  - Consistent benefits require 8-12 weeks of therapy and home exercises

- **Visual Flow and complexity**
  - Use exercises that include visual complexity to address the visual symptoms of 3PPD

- **Real world settings**
  - Use indoor and outdoor settings that patients encounter to promote integration into daily activities
**Treatments**

- Autonomic dysregulation
  - Relaxation and breathing

- Fatigue
  - Aerobic exercises

- Motion Intolerance
  - Habituation exercise

- Visual Vertigo
  - Desensitization exercises
Autonomic Dysregulation

- Relaxation techniques
- 4 Square breathing
- Relaxation videos
- Meditation apps

- (Eva to discuss more)
Motion intolerance

- Habituation
- Repeat motions that are provocative
- Grounding activities (provide three points of contact)
- Set functional goals
  - Do one activity that they used to enjoy
  - Increase “normal “ activities weekly
Visual vertigo

- Decrease visual dependence
- Sensory comparison exercises
  - VOR cancellation with busy background
  - 2D immersion into stimulation visual scenes
    - Start slow example 30 seconds at a time
    - Slowly increase complexity of visual stimulus (optokinetic to rollercoasters)
- 3D virtual reality
  - Headsets
  - Study
Fatigue

- Start a walking program early
- Initiate aerobic activity
  - Stationary bike
  - Treadmill when tolerated
  - Other activities patient enjoyed (running, swimming, bicycling)
Key points

- Strong association with anxiety but not a psychiatric disorder
- Patients rarely fall
- Usually normal gaze exam
- Significant motion intolerance
- Difficulty in crowds
| Restructure vague goals into specific activities |
| Normalize schedule |
| Introduce aerobic activity |
| Promote healthy sleep/wake cycle. |
Trends

- Individuals with negative and emotional beliefs about their condition tend to have prolonged recovery and increased perception of illness (Kit et. al, 2014)

- Higher educated individuals may have attributes that also contribute to prolonged recovery (possibly increased knowledge, hypervigilance, high achievers) (Snell DL, Brain Injury, 2011)
Talking points

- Evidence that the original problem has healed
- Validate that symptoms are real and there is an reason for what they feel dizzy
- Can get better and back to life activities
- Problem is with functioning of CNS not structure or disease
- Discuss reweighting of sensory systems
- Explain anxiety can be manifested in different ways
- There may always be triggers, you can recognize them and avoid them when possible
- Listening is just as important as speaking
Do’s and Don’t’s

➢ DO:
  ➢ Be their coach!
  ➢ Use motivational interviewing.
  ➢ Educate on condition and common complaints that accompany 3PD.
  ➢ Legitimize patient’s symptoms and reassure on outcome of recovery.
  ➢ Manage distress/negative expectations and provide suggestions to decrease stress/anxiety.
  ➢ Set them up for success.

(Lambert et al, 2018)
Don’t:

- Ask frequently about symptoms or medications.
- Ask patient to keep a symptom diary.
- Over-refer to other specialists or suggest multiple opinions or tests (especially if scans have been normal)
PSYCHOLOGICAL CONSIDERATION FOR PATIENTS WITH PPPD

PRESENTED BY EVA G. MIHOVICH, PH.D
SENIOR PSYCHOLOGIST, RUSK REHABILITATION
Objectives:

- Identify core symptoms of anxiety related to vestibular disorders.
- Describe evidence-based interventions for anxiety management in the vestibular population.

Disclosures: I have no financial or nonfinancial disclosures regarding this presentation.
Psychological precipitants of PPPD

The most common psychological precipitants of PPPD are anxiety disorders. According to Staab, et al, 2017, the predominant diagnostic categories are

- Panic attacks (15%)
- Anxiety (15%)
Panic Attack Description DSM-5

An abrupt surge of intense fear or intense discomfort that reaches a peak within minutes. The surge can occur from a calm state or an anxious state.

Panic attacks can occur in the context of any anxiety disorder as well as other mental disorders such as depression, PTSD, substance abuse and some medical disorders, such as vestibular disorders.
Panic Attack Criteria-DSM-5

Four or more of the following symptoms must occur to diagnose panic attack:

1) Palpitations, pounding heart, or accelerated heart rate
2) Sweating
3) Trembling or shaking
4) Sensations of shortness of breath or smothering
5) Feelings of choking
6) Chest pain or discomfort
7) Nausea or abdominal distress
Panic Attack Criteria, con’t

8) Feeling dizzy, unsteady lightheaded or faint
9) Chills or heat sensation
10) Paresthesias (numbness or tingling sensations)
11) Derealization (feelings of unreality) or depersonalization (being detached from oneself)
12) Fear of losing control or “going crazy”
13) Fear of dying
Prevalence of Panic Attacks-DSM-5

In US general population, 12 month prevalence estimate is 11.2% in adults. No significant ethnic or racial differences, but females more frequently affected than males. In panic disorder, which is a psychiatric diagnosis characterized by recurrent panic attacks, the ratio of female to male is 2:1. Interestingly, prevalence rates of panic attacks in Europe appear to range from 2.7-3.3%
Definition of Anxiety-DSM-5

- Anxiety disorders include disorders that share features of excessive fear and anxiety
- *Fear* is the emotional response to real or perceived imminent threat, whereas *anxiety* is anticipation of future threat
- Fear and anxiety can overlap, but differ in significant ways. Fear is more often associated with surges of autonomic arousal necessary for flight or fight, whereas anxiety is more often associated with muscle tension, vigilance in preparation for future danger and avoidant behaviors
Generalized Anxiety Disorder (GAD) – DSM-5

• GAD is typified by recurrent excessive anxiety and worry about a number of events or activities, such as work
• The individual finds it difficult to control worry
• The anxiety/worry are associated with 3 or more of the following 6 symptoms
  1) Restlessness, feeling keyed up or on edge
  2) Being easily fatigued
  3) Difficulty concentrating/mind going blank
  4) Irritability
  5) Muscle tension
  6) Sleep disturbance or restless, unsatisfying sleep
• Causes significant distress or impairment
Prevalence of GAD-DSM-5

• The 12 month prevalence of GAD is 2.9% in adults in the general community of the US.
• The 12 month prevalence in other countries ranges from 0.4-3.6%
• Lifetime morbid risk is 9.0%
• Females 2X likely to experience GAD than males
• Individuals of European descent tend to experience GAD more frequently than persons of non-European descent (Asians, Africans, Native Americans, etc)
# GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?

(Use “✔” to indicate your answer)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Feeling nervous, anxious or on edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Not being able to stop or control worrying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Worrying too much about different things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Trouble relaxing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Being so restless that it is hard to sit still</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Becoming easily annoyed or irritable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Feeling afraid as if something awful might happen</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

(For office coding: Total Score  \( T_{\text{Total}} = \text{Score 1} + \text{Score 2} + \text{Score 3} \))

Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.
GAD-7 Scoring

• This is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of “not at all,” “several days,” “more than half the days,” and “nearly every day,” respectively. GAD-7 total score for the seven items ranges from 0 to 21.

• Scores represent:
  • 0-5 mild
  • 6-10 moderate
  • 11-15 moderately severe anxiety
  • 15-21 severe anxiety.
THE PSYCHOLOGICAL TREATMENT OF PPPD
Key Elements of Vestibular Rehabilitation Psychology

◆ Utilization of evidenced based treatment for anxiety, e.g. Cognitive Behavior Therapy (CBT)

◆ CBT can be augmented with another evidence based treatment, Mindfulness Based Stress Reduction (MBSR)

◆ Therapeutic flexibility and creativity to accommodate the often highly idiosyncratic presentation of physical symptoms

◆ Collaboration with vestibular rehabilitation therapists is likely to enhance treatment
CBT Definition of Anxiety

“When you feel anxious, worried, panicky, or afraid, you’re telling yourself that you’re in danger and that something terrible is about to happen...Once you start to feel anxious, your negative thoughts and feelings begin to reinforce each other in a vicious circle”

-D. Burns, 2006
The “Vicious Cycle” of Anxiety and Dizziness

Dizziness, Vertigo, Imbalance

Anxiety, Hypervigilance, Panic

Stress/Perception of Danger
A CBT Model of PPPD

“Psychological processes are implicated in the development and maintenance of PPPD, with similarities to cognitive models of health anxiety and panic disorder, and there is evidence that CBT is an effective treatment... It is suggested that dizziness becomes persistent when it is processed as a threat, and that it is maintained by

1) unhelpful appraisals
2) avoidance and safety behaviors
3) attentional strategies including selective attention to body sensations associated with dizziness.”

Whalley and Cane, 2016
Cognitive Behavioral Model of Persistent Postural Perceptual Dizziness (PPPD)

Initial or precipitating phase

Vulnerability

- Pre-existing anxiety
- Sensitivity to internal sensations
- Illness history
- Beliefs about illness
- Beliefs about coping ability
- High trait anxiety
- Low trait extraversion

Triggers for current episode

Acute vestibular disorder, e.g.
- Benign Paroxysmal Positional Vertigo (BPPV)
- Vestibular neuritis
- Labyrinthitis
- Vestibular migraine
- Meniere’s disease
- Panic attack with focus on balance sensations

Balance control system dysfunction resulting in balance symptoms

Initially:
- Acute vertigo
- Imbalance
- Nausea
- Vomiting

Later:
- Persistent dizziness
- Hypersensitivity to motion and visual stimuli

Appraisals

- Threat beliefs
- Health beliefs

Emotional response to appraisal (typically anxiety)

Behavioural adaptation strategies

- Avoidance of any movements or activities that may cause dizziness symptoms, e.g. head or body movements, walking, socialising
- Safety behaviours
- Holding on for safety

Attentional adaptation strategies

- Vigilance to environment for potential threats to safety or stability
- Mental checking of bodily sensations related to balance

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The CBT “Tool Box” of Vestibular Psychology

A. Psychoeducation
B. Identification of triggers/symptom tracking (includes thought patterns)
C. Mindfulness
D. Anxiety Management
E. Cognitive Restructuring
F. Reinforcement of self esteem and self efficacy
Anxiety Management Training

◆ Breathing Exercises

  Square Breathing Technique (Breathe in to a count of 4, hold for a count of 4; exhale to a count of 4; do 4 times

  Grounded Breathing Technique (Employs mindful awareness of feet on the ground to counterbalance lightheadedness, dizziness, etc.)

  Patients who have a pre-existing breathing exercise (yoga) can practice that instead

  Be cautious about monitoring increased lightheadedness due to breathing exercises; do not want to increase anxiety during exercise
Mindfulness Training

Mindfulness, the act of paying attention without judgment, is helpful for several reasons.

- Mindfulness meditation is a well known stress reduction technique, so it is useful for anxiety management skills training
- It can be helpful for emotional regulation, enhancing the skill of mindfully observing unpleasant emotions and sensations (anxiety and dizziness) without overreacting.
- Mindfulness can be useful in helping the vestibular patient “radically accept” that s/he may have a recurrent or permanent disorder that will necessitate the need to utilize the skills learned in vestibular rehabilitation and psychotherapy throughout his/her life
Imagery

Imagery, picturing a scene or event in one’s mind and eliciting various sensory components, can be utilized in several ways:

- **Relaxation**- picturing a pleasant location can deepen relaxation
- **Performance enhancement**- can be used to augment virtual reality when devices are not available between treatment sessions
- **Behavioral rehearsal**- can enhance preparing for a stressful event
Stress Inoculation
Stress Inoculation

Stress inoculation is a therapeutic approach that combines several techniques or interventions to train individuals to cope with unpleasant emotional or physical arousal (anxiety, anger, pain and dizziness) in anticipated stressful situations. Components are:

1) Acquisition of a rapid stress reduction technique, such as breathing or cue control

2) Development of coping self statements, which are sentences or phrases that reduce arousal and positively yet realistically reframe habitual negative thought patterns to encourage success

3) Imaginal rehearsal of the anticipated stressful event, utilizing relaxation strategies and coping self statements during imagery to reduce arousal experienced during the imagery exercise

4) Reinforcing success when the stressful event is actually faced in real life. Exposure to the event is reinforced even if it is not completed, to build confidence.
CASE PRESENTATION
History:

- Patient is a 46 year old female presenting to vestibular physical therapy evaluation May 2018 accompanied by her husband.
- October 28, 2017 she passed out while in the bathroom, hit her head with LOC for 5 minutes.
- She felt fine afterwards therefore went to work as an RN in a local hospital the next day.
- One week later she was in her car driving and started to get palpitations and subsequent dizziness.
- She decided to stay home from work for a week and she began to feel better however became a cycle of one week on/off from work due to increase in symptoms.
- November 11, 2017 - went to ED for dizziness. Reports CT was normal.
- MRI in December - Patient states MD reported "brain swelling."
- December 19, 2017 - stopped working
- Was bound to her bed throughout remainder of December due to severe dizziness and imbalance.
- MRI in February 2018 - "bulging discs and pinched nerves" as well as "brain swelling."
- March 2018 saw cardiology due to report of palpitations with subsequent dizziness. Wore a holter monitor for 72 hours which was unremarkable therefore was told her symptoms are "just vertigo."
- March 2018: Patient reports she went for additional opinions from different Neurologist and Neuro-ophthalmologist who are in agreement that patient's symptoms are 2/2 concussion.
Current Symptoms:

- Current symptoms: Difficulty sleeping, constant dizziness that increases with head and body movements, throbbing/pulsating headaches, imbalance.
- Requiring one person assist for all mobility
- Furniture reaching within the home
- 5 minute tolerance to standing or walking
- Sensitivity to light and sound
- Limits exposure to crowds
- Increased anxiety related to fear of provocation of symptoms
- Symptoms provoked by: light, loud sounds, busy environments, quick movements of head and/or body, bending down, prolonged screen time, watching moving objects pass by, reading
Social History

- Patient lives with husband and 2 children.
- One child with special needs living in a facility
- Previous relationship with domestic abuse.
- Prior history of depression/anxiety
- Course of therapy from January–February 2018 did not help
Clinical Findings:

- No spontaneous or gaze evoked nystagmus
- Negative HIT
- 7 line difference on DVA
- 14/30 on the FGA
- Distance on the 2 minute walk test: 88m (norm 183m)
- DHI: 82
- ABC: 23%
- GAD-7: 15 indicative of anxiety
Video
Intervention

• Habituation to visual motion stimuli through optokinetic videos with 3 point contact
• Aerobic exercise (treadmill at home)
• Patient education regarding PPPD with written handouts and visual aids
• Weekly goals for increasing pleasurable activities (attending church, decorating house, walking with her husband)
• Education regarding meditation and grounded breathing
• Vestibular psychology
Outcomes

• Functional Gait Assessment: 23/30 (improved from 14/30 at evaluation)
• Dizziness Handicap Inventory: 82 (unchanged)
• Activities Specific Balance Confidence Scale: 64% (improved from 23% at evaluation)
PSYCHOLOGY CASE PRESENTATION
References:


References


References


References, Cont


THANK YOU