Psychiatry in Medical Settings

Functional Neurologic Disorders

Jeffrey P. Staab, MD, MS
10 February 2017
Disclosure

• Commercial support – None

• Grant support
  • National Institutes of Health
  • Mayo Clinic

Off-label medication use

• No medications are approved to treat functional neurologic disorders.
Overview

1. Watch your language – what was old is new again
2. What it is, not what it’s not.
3. What we think we think – a brief review of mechanisms old & new
4. Treat the untreatable – simple countermeasures for FND.

“When a patient calls on you, he is under no obligation to have a simple disease just to please you. He has every right to have a disease presenting as an extremely complex case.”

- Jean-Martin Charcot, 1888
A diagnostic conundrum

- Psychiatric diagnosis
  - Conversion disorder

- No diagnosis
  - Non-cardiac CP

- Medical diagnosis
  - 35 Functional GI disorders (Rome III)
  - Fibromyalgia (ACR)

- Limited availability of mostly ineffective treatments

- No treatment

- FDA-approved medications
- Off-label medications
- Effective behavioral therapies (esp. for oral and anal functional GI disorders)
Classifications of Somatic Symptom Disorders

**DSM-5**
- Somatic symptom disorder
- Illness anxiety disorder
- Conversion disorder (Functional neurologic symptom disorder)

**ICD-11 draft**
- Bodily distress disorder
- Hypochondriasis?

**Somatic symptom burden**
- Illness anxiety

**Functional neurologic syndromes**
- Dissociative neurologic symptom disorder
  - Movement disorder
  - Altered sensation
  - Cognitive symptoms
  - Seizures
  - Etc.
Origins of “functional”

• “[A] functional disorder [is] so called because the symptoms seem arise from a change in the mode of action of the organ, unconnected with any perceptible alteration of structure.”


• Andrew Combe, MD, 1831
  Scottish physician and President, Edinburgh Phrenological Society
## Examples of functional neurologic signs

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement</td>
<td>Irregular tremor that varies in amplitude and frequency, usually distractible and entrainable.</td>
</tr>
<tr>
<td></td>
<td><strong>Special challenge -- dystonias</strong></td>
</tr>
<tr>
<td>Altered sensation</td>
<td>Dense loss of all sensory modalities usually in a sharply demarcated geographic, not anatomic, area of the body.</td>
</tr>
<tr>
<td>Paresis</td>
<td>Total or variable loss of strength usually involving an entire body part with give-way weakness or inconsistent effort on strength testing, and intact muscle bulk, tone, and deep tendon reflexes.</td>
</tr>
<tr>
<td>Speech</td>
<td>Excessively slow, halting, strained, or breathy speech that may include stuttering or slurring of multiple phonemes.</td>
</tr>
<tr>
<td>Seizures</td>
<td>Long, variable, frequently recurrent spells, Bilateral motor movements with intact consciousness Opisthotonus, pelvic thrusting</td>
</tr>
<tr>
<td></td>
<td><strong>Special challenge -- partial epileptic seizures with or without secondary generalization, frontal and temporal lobe epilepsy</strong></td>
</tr>
<tr>
<td>Gait</td>
<td>Excessively slow or wide-based without ataxia, atasia-abasia Stiff-legged, bent-legged, leg dragging, extraneous movement</td>
</tr>
<tr>
<td></td>
<td><strong>Special challenge -- dystonias</strong></td>
</tr>
</tbody>
</table>
Epidemiology

- General population
  - Prevalence: about 50/100,000
  - Incidence:
    - Functional seizures: 1.5-4.9/100,000
    - Functional weakness: 4-5/100,000
    - Similar to multiple sclerosis

- Neurology practices
  - Multiple studies
    - “medically unexplained symptoms” = 30%
    - Scottish neurologists – 1144/3781 consecutive patients = 30.3%
    - Co-existing headache disorder – 25%
    - Other co-existing neurologic disorder – 25%

Predisposing, Precipitating, Perpetuating Factors

- **Predisposing factors**
  - Female sex
  - Younger age
  - Less education – mixed data
  - Adverse life events – **overestimated**

- **Precipitating factors**
  - Structural, functional, or psychological events
  - Functional changes in brain activity
  - Conditioning – disease modeling

- **Perpetuating factors**
  - Diagnostic uncertainty – **an iatrogenic contribution**
  - Illness beliefs
  - Social factors – **often overly interpreted** as "secondary gain"

*Carson and Lehn, “Epidemiology” in Hallett et al., eds., Functional Neurologic Disorders, Elsevier, 2016*
Adversity and functional syndromes

- Functional seizures
  - Sexual abuse
    - Average of published reports: 28-36% (similar to epilepsy)

- Functional vestibular syndromes
  - Munich study N=343
  - Psychological trauma history & adverse life events
    - No difference between structural and functional disorders
    - Greater morbidity regardless of diagnosis

Koby et al., Epilepsy & Behavior, 2010; Radziej, et al., J Psychosom Res, 2015
Persistent postural-perceptual dizziness
PPPD -- A common functional vestibular disorder

Anxiety
- Panic attacks 15%
- Generalized anxiety 15%

Acute vestibular syndrome
- with/without secondary anxiety 25%

Neurologic Illnesses
- migraine 20%
- traumatic brain injury 15%
- autonomic dysregulation 7%

Other Medical Conditions
- dysrhythmias, adverse drug reactions 3%

N = 345

< 1/3 of cases are “psychogenic”

Staab & Ruckenstein, Arch Oto-HNS, 2007
Psychological mechanisms – dissociation

1. Detachment symptom -- DSM (depersonalization, derealization)
   - Dissociative disorders
   - Traumatic stress disorders
   - Anxiety disorders (panic attacks)
   - Neurologic disorders (aura)
   - Intoxication
   - Extreme fatigue

2. Defense mechanism -- dynamic
   - Conversion disorder
     - last line of defense
   - Dissociative disorders
     - disintegration of self
   - Pierre Janet – original concept “compartmentalization” - a reversible loss of voluntary control over intact processes and functions
   - Reduced executive monitoring – automatization of learned behaviors
   - Reduced executive control – lower level processes control behaviors

Brown, in Hallett et al., eds., Functional Neurologic Disorders, Elsevier, 2016
Brain imaging – functional movement disorders

- Supplemental motor area (action selection)
- Motor cortex and efferent pathways (intact)
- Anterior cingulate cortex (prediction-comparison)
- Temporo-parietal junction (self-agency)
- Various regions of prefrontal cortex (emotional appraisal, self-reflection, inhibition)
- Amygdala (instinctive emotional responses)

Hallett and Aybek & Vuilluemier, in Hallett et al., eds., Functional Neurologic Disorders, Elsevier, 2016
PPPD: Reduced activity and connectivity in cortical networks that integrate the self into space

- Posterior insula/superior temporal gyrus (PIVC)
- Middle occipital cortex
- Anterior insula/inferior frontal gyrus
- Anterior cingulate cortex
- Hippocampus

Downward arrow: Local response in PPPD

Downward arrow: Functional connectivity in PPPD

Indovina, et al., Front Behav Neuro, 2015
Does hysteria still exist?  **Yes!**

- Case of classic hysteria
  - 64 year old grandmother
  - Matriarch of extended family
  - Resided comfortably in a village in Guam
  - Visiting friends in neighboring village when an 8.2 magnitude earthquake struck the island
  - Became acutely blind, deaf, dumb, and lame immediately after the quake.

- What psychological mechanism is at work?
  - Irresolvable conflict converted into functional symptoms
  - Behavioral paralysis (dissociation) due to fear

- “paralyzed by fear”, “dumbfounded”, “blinded by emotions”
Treatment

- **Functional neurologic spells** – Cognitive therapy
  - 3-site study, 4 arms, N=38 (of 589 screened)
  - Outcomes at 16 weeks
    - CBT + sertraline (↓59%)
    - CBT alone (↓51%)
    - Sertraline alone (n.s.)
    - Treatment as usual (n.s.)

- **Functional gait and movement disorders** – Physical therapy
  - Mayo Clinic BeST Program – 1 week, twice daily PT/OT, N=60
    - Intensive PT/OT – 70% response (marked reduction)
    - Treatment as usual – 22% response
    - Benefits sustained at 25 month follow-up

LaFrance WC, et al., JAMA Psychiatry 2014; Czarnecki K, et al., Parkinson Rel Dis, 2012
Treatment

- **Functional neurologic spells** – behavioral (habit reversal) therapy
  - With premonitory symptoms
    - Relaxation techniques – diaphragmatic breathing
    - Abortive maneuvers – various (creativity)
  - With main symptoms
    - Motoric countermeasures
      - Relaxation – breathing or passive muscle relaxation
      - Entrainment – capture and control tremor
      - Competitive movement – big, slow, smooth, normal

- Outcomes
  - Not systematically studied
  - Clinical experience
    - Quickly effective, “tug of war”, continued struggles
Treatment

• Functional neurologic disorders

• Psychotropic medications
  • NO proven efficacy for functional neurologic disorders
  • Unlike pain, fibromyalgia, functional GI disorders

• May be used for comorbid psychiatric diagnoses
  • Not “stress”

• Limit polypharmacy
  • Coordinate care regarding non-psych use of psychotropics
Conclusion

“I think that we can summarize this history in … three great divisions.”

• 1st anecdotal and descriptive, a period of sibyls, witches
• 2nd clinical, physicians sought, above all, a medical character
• 3rd psychological, interpretation has been sought of these innumerable phenomena

“Later, perhaps, there will come an anatomical and physiologic period, but, in my opinion, it does not yet exist.”

Pierre Janet
“The Problem of Hysteria”
Lecture at Harvard Medical School, 1906
Resources

- www.neurosymptoms.org
- www.fndhope.org

Please pass question cards to the aisles.