Acquired Stuttering in Post-Deployed Service Members: Neurogenic or Psychogenic

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Acquired Stuttering in Post-Deployed Service Members: Neurogenic or Psychogenic?

Population-Independent Overview of Acquired Stuttering

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ASHA, 2012
Content

- Emphasis on functional/nonorganic/non-neuromotor/psychogenic etiology
- A few facts about unexplained medical conditions & conversion & stress-related disorders
- Interactions between organic & nonorganic disease
- The variety of psychogenic speech disorders
- Acquired neurogenic stuttering
- Acquired psychogenic stuttering
- A few illustrative cases
- Diagnostic tenets & clues
- Management principles
Some Basic Facts In Medicine

- Unexplained physical symptoms in people w/o relevant organic pathology, but with relevant psychosocial distress, account for ~45% of visits to general medical clinics (Tucker et al., 1997).

- ~11% of patients seen in some neurology outpatient clinics have symptoms not explained by organic disease (Carson et al., 2000).
Some Basic Facts (cont.)

- 1-9% of admissions to hospital neuro units have psychogenic causes (Bhatia & Schneider, 2007)

- Such problems account for significant % of health care costs. They can create disability whether or not physical disease is present. (Carson et al., 2000b; Katon and Walker, 1998).

- Anything that disrupts normal brain functions has potential to cause emotional or cognitive symptoms (Tucker et al., 1997).
Some Facts About Speech

- Speech can be altered by psychological disturbances.
- Psychogenic speech disorders (PSDs) can present in context of suspected neurologic disease.
- Psychogenic & neurogenic speech disorders can co-occur.
- PSDs, including stuttering, are not rare.
Acquired Communication Disorders (N=14,438)

- Motor Speech Disorders: 41%
- Aphasia: 18%
- Other neurogenic speech disorders: 1%
- Other cognitive language disorders: 11%
- Psychogenic: 4%
- Anatomic deficiency: 8%
- Voice (non-neurogenic/non-psychogenic): 8%
- Idiopathic: 9%
Some Diagnostic Tenets

- Distinguishing between MSDs & PSDs can contribute to diagnosis of neurologic & psychogenic disorders.

- Distinguishing between MSDs & PSDs can be difficult.
  - essential to recognize lawful manifestations of “true” MSDs & features of speech incompatible with neurologic dz. *Know the rules!*
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<td>Mixed</td>
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<td>Apraxia of speech</td>
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Psychogenic Speech Disorders (PSDs)

A wide variety of speech disorders that represent manifestations of one or more types of psychologic dysequilibrium, such as anxiety, depression, conversion reaction, or personality disorders, that interfere with volitional control over any component of speech production. *(adapted from Aronson, 1990)*

Other terms: *Functional; nonorganic; non-neuromotor*
The Variety of PSDs

- Voice disorders
- Stuttering-like dysfluency
- Pseudoforeign dialect
- Infantile speech
- Other prosodic disturbances
- Other speech-voice-resonance-articulatory disturbances
- Various combinations of any of the above

Most common
Etiologies (prime examples)

- Depression
- Conversion Disorder
- Stress (including post traumatic stress)

Probably most relevant To SLP
Neurologic Disease & Depression

- ~1/3 of those with neurologic dz have severe depression or anxiety
  - Common in PD, epilepsy, AD, MS, Huntington’s dz
  - Occurs in ~ 50% of unselected stroke patients
  - May not simply be reactive

- *One of most common emotional sequelae after TBI*
Conversion Disorder
(subtype of somatoform disorders)

Alteration or loss of physical functioning that suggests a physical disorder but is actually an expression of psychologic conflict, is not consciously/voluntarily produced, & cannot be explained by any pathophysiologic mechanism.

From DSM III

- Probably as common as other disabling conditions (e.g., M.S., schizophrenia) (Lang, 2006)
Conversion - Psychologic Traits & Comorbidity

- Depression in 52-94%
- Dependent, histrionic, antisocial, or passive-aggressive personality
- Hx of sexual abuse, incest, drug abuse
- Tendency toward lower IQ or socioeconomic status
- Overall more prevalent in women but frequent in soldiers (men & women) in combat situations & with PTSD.
- May occur in psychologically stable people who are in unusually stressful situations!!!
Conversion & Neurologic Disease

- Sxs often neurologic in character - mimic neuro dz to varying degrees

- 15-30% with conversion reaction diagnoses have organic disease, often neurologic disease.

- High incidence in TBI, MS & other neurologic disorders
  - - - ? biologic mechanisms

- Some neurologic diseases may predispose to conversion & provide a model for it.
Is it all in your head?
Neurophysiologic correlates?

Primary sensory & motor pathways are generally intact
- on basis of EEG, sensory evoked potentials, brainstem auditory evoked potentials, & motor evoked potentials.

- Hemodynamic brain imaging is another story, and suggests........
Yes, it is all in your head!

- Few functional imaging studies of conversion disorders but, for example, studies have shown
  - Reduced activity in several cortical regions in Ss with various conversion symptoms
  - Different from intentionally feigned problems
  - Generally reduced activation in premotor cortex & increased activation cingulate (limbic) cortex

- Vuilleumier et al. (2001) – SPECT in 7 patients with conversion dx and unilateral limb weakness, but no other psychogenic or neurologic symptoms
Decreased activation during contralateral sensorimotor symptoms

Vuilleumier, *Progress in Brain Res*, 2005
Decreased activation during contralateral sensorimotor symptoms & increased activation with recovery

Vuilleumier, *Progress in Brain Res*, 2005
Stress

A state of bodily or mental tension resulting from factors that tend to alter equilibrium.

- Normal part of life - can invigorate sense of well being & accomplishment
- Comes from many sources (work, family, social relationships, life events)
- Occurs in people with or without psychiatric disease
Psychologic Stress – Relevant Mechanisms

People may be predisposed by personality, social or cultural bias, early learning, or physiologic makeup to hyperreact to stress through a particular neuromuscular or visceral structure.

- e.g., laryngeal muscles are susceptible to emotional stress (muscle tension dysphonia, psychogenic aphonia, etc.).
Stress - Organic & Psychogenic Interactions

- Organ affected may be determined by (genetic?) weakness/vulnerability

- Organic disease may precede psychogenic response
  - It may “direct the somatization of psychodynamic conflict” (Milutinovic ‘91)
    - (e.g., URI preceding psychogenic voice disorder)
Acquired Stuttering in Adults

- Stuttering-like dysfluencies can develop in adults.
- It can be neurogenic (NS) or psychogenic (PS) in origin.
- PS can occur in people with neurologic disease & vice versa.
- NS & PS can be distinguished from each other but not always easily.
- Treatment of PS can be rapidly successful!
Neurologic Stuttering

Etiologies

- Stroke & TBI most common
- also reported in PD, PSP, dementia, epilepsy, dialysis dementia, tumors, anoxia, thalamotomy, DBS, drug toxicity or abuse

Localization

- all lobes but occipital; supplementary motor area; frontal white matter; basal ganglia; thalamus; midbrain; brainstem & cerebellum.
Caused by & sometimes alleviated by wide variety of drugs
- cholinergic, dopaminergic, noradrenergic, serotonergic, & anticonvulsants.

- more persistent with multifocal/bilateral lesions

- may develop without identifiable lesions
Neurologic Stuttering - Clinical Characteristics

- Sound/syllable repetitions, prolongations, blocking
- may not be restricted to initial syllables
- may include function as well as content words
- awareness of dysfluencies but without significant anxiety/struggle
- may not show adaptation effect or improvement with choral reading or singing
Neurologic Stuttering (NS)
Associated Deficits & Nature

Can occur in isolation but most often assoc. with
- aphaasia (no specific “type”)
- apraxia of speech
- dysarthria (hypokinetic > others?)

Nature
- byproduct of aphaasia & MSDs
- disruption of equilibrium in bilaterally innervated system?
Dysfluencies associated with Aphasia
Dysfluencies with Hypokinetic Dysarthria (PD)
Psychogenic Stuttering (PS)

Baumgartner & Duffy (‘97) - retrospective study of 49 cases with PS without neuro dz (PS) & 20 people with PS + neuro dz (PS+ND)

For both groups:
- 1:1 male:female
- age @ onset ~ 46 years (majority <50)
- Handedness & ed similar to general population
- time post onset: < 10 days (11%); > 1 year (25-33%)
- Most in both groups had concerns about other motor, sensory or cognitive functions
PS without Neurologic Disease

(Baumgartner & Duffy, ’97)

- 82% complained of headache, weakness, incoordination, or cognitive difficulty.
- 75% had no history of clear neurologic insult & had normal neurologic workups. Among remaining patients...
  - 3 had vague history of head trauma.
  - 3 had tension headache or migraine
  - 1 had a distant history of CNS infection.
PS with Neurologic Disease

(Baumgartner & Duffy, ‘97)

**Diagnosis**

- 25% - degenerative dz
- 25% - Seizure disorders
- 25% - TBI
- 15% - Undet. CNS disease
- 10% - Stroke
- 5% - Myasthenia gravis

**Lesions** – Either or both hemispheres, brainstem, CBLM.

**Accompanying Disorders**

- 75% - no dysarthria, apraxia of speech, or aphasia.
- 20% - dysarthria
- 5% - equivocal evidence of apraxia of speech or aphasia.
Speech Characteristics - Both Groups
(Baumgartner & Duffy, ‘97)

- Sound & syllable repetitions most frequent dysfluency.
- Unvarying, intermittent, or unpredictable.
- Speech rate fast or slow.
- > 50% had struggle behavior!
- 10% had telegraphic or infantile grammatic structure!
- Some were unvarying under any observed circumstance
- Others varied according to task, environment, time of day.
- > 50% in both groups improved to normal/near normal in 1-2 sessions!
Psychiatric Diagnoses - Both Groups

PS (N=20) PS + ND (N=5)
(Baumgartner & Duffy, ‘97)

- Most frequent: conversion disorder, anxiety, and depression.
  - Other: personality disorder, post traumatic stress, drug dependency, adjustment disorder, hysterical neurosis.

Roth, Aronson & Davis (1989) - psychological profiles

- immaturity and egocentricity
- emotional dependence
- tendency to use physical signs as a means of coping with conflict or stress.
PS Case #1

29 year old woman with onset of unremitting speech difficulty 11 days following an apparent seizure.

- PMH: 2 years ago - hit in head by falling beam, with subsequent indeterminate spells ("shaking all over"), headache & chronic neck/back pain.
**PS Case #1 (cont.)**

- **Psychiatric Consult:** Headaches, irritability, poor concentration & subjective memory problems suggest post-concussion syndrome. Speech problems & shaking spells likely conversional but why present now is uncertain. Speech normal after speech tx.

- **Final Neuro Dx** = Post concussion type syndrome manifest by multiple neurologic symptoms & vascular type headache.
  - Referred for pain management. Emphasized need to get off narcotic analgesics.
PS Case # 2

48 year old man with TBI from MVA 5 years ago. Seen as part of Outpatient TBI program evaluation.

- No physical deficits.

- Speech difficulty began ~ 6 months postonset. Was back to work as UPS sorter at the time, working double shifts.
PS Case # 2 - Speech
**PS Case # 2 (cont.)**

- **Neuropsychology**: Mild learning inefficiency & marginally-mildly impaired memory. Normal to high average intellectual abilities. Problems not limiting but a clear change from prior functioning. MMPI: Depression & anxiety.
  - Overconcern about physical problems.
  - Acknowledged stress could play a role.
  - Encouraged to settle litigation ASAP.
  - Seek alternative employment because of stress & tx for his 22 y.o. son with bipolar disorder & behavioral problems.
Differential Diagnosis
Hx findings that support psychogenic Dx
(far from foolproof!)

- Onset @ time of physical (but not neuro.) or psych trauma
- Ongoing pattern of probs from distant traumatic event
- Occasionally emerges in anticipation of trauma
- Prior hx of unexplained speech or physical deficits
- Evidence of primary or secondary gain
- Unexplained fluctuations or situation specific problems
- Denial of psychological influences!
Criteria for Diagnosis of PSDs

- Symptom incongruity
- Symptom psychogenicity
- Symptom reversibility

adapted from Sapir (‘95)
Speech Examination - Important Questions

- Is oral mechanism exam consistent with speech abnormalities & patterns of abnormality found in neurologic disease?
- Is the speech deficit consistent?
- Is it suggestible or distractible?
- Does speech fatigue in a lawful manner?
- Is the speech deficit reversible?
Caveat

Neurologic & psychogenic disorders can co-exist
- Management -

Basic Tenets & Principles

- Prognosis is generally good, esp. early postonset or if underlying psychologic triggers no longer active.
- Presence of neuro disease does not preclude success.
- Many PSDs can be managed effectively with assertive tx.
- Attempt tx in diagnostic session whenever possible.
- Symptoms & explanations must be addressed.
- Pt’s belief that problem is organic must be addressed.
Management - Basics (cont.)

- Clinician attitude & manner are crucial.
- A variety of symptoms respond to similar techniques.
- Laying on the hands may be important - it often is for voice disorders.
- Esp when tx is rapidly successful, patient must have an explanation for it.
- The future must be addressed.
An Illustrative Case

52 year old R handed medically disabled flight paramedic injured during Iraq war

- Referred for several medical problems & neurological symptoms
  - Neuro SXs = spells IDd as SZs, tremors, chronic headache & anxiety, & “stuttering”
  - Began following injuries sustained when building he was doing rooftop surveillance from was struck by mortar rounds
    - head injury with 20 min LOC (neuroimaging WNL)
    - most neurologic symptoms began ~ 2 weeks post injury
Internal Medicine

- Ulcer with GI/rectal bleeding leading to anemia, fainting & hospitalization during Mayo workup
- Significant weight loss – told had pancreatic tumor but ruled out
- Lumbar disc disease with chronic pain
- ? Seizures
- PTSD
- At discharge ~ 4 months later, GI bleeding was under control. Spinal pain treated with P.T.
An Illustrative Case (cont.)

Psychiatry

- Began work as civilian paramedic at age 16 & at that age saw a patient die from wounds after being crushed by a boxcar
- 4 months prior to injury in Iraq some buddies were killed by IED
- Guilt about soldiers he could not save & overwhelming triage decisions about who to care for
- Had recently been living in Switzerland b/c of job opportunity for wife
  - Isolated and unhappy there
  - Separated from wife (no children)
  - Planning permanent return to U.S.
- No hx of mood or anxiety disorder prior to injury in 2005
An Illustrative Case (cont.)

Psychiatry (cont.)

- Diminished self-worth, plagued by nightmares of things he saw in Iraq & as a nonmilitary paramedic over many years prior to that.
- Psych DX: Depression, anxiety, PTSD symptoms (not suicidal)
  - TXd pharmacologically for depression, anxiety & insomnia; + brief supportive tx
  - Improvement noted over a few months (feeling calmer) but still plagued by trouble being around people, noise, nightmares
  - Discharged from care when he headed to VA system for tx of PTSD
An Illustrative Case (cont.)

**Neurology**

- Clinical exam = persistent stuttering & variable UE tremor
- At risk for epilepsy & nonepileptic behavioral spells
- EEG, inpatient, with prolonged monitoring, including during spells = Normal
  - Spells = rapid eye blinking, arching of back, repetitive synchronous & irregular arm, leg, & head movements & coughing & snorting noises, sometimes with very slow speech and marked hesitation
An Illustrative Case (cont.)

Speech Pathology

- Stuttering/stammering began after injury in Iraq, without remission but with some good days (80% normal).
  - Believes problem mood related, worse if “on the spot,” anxious, or fatigued.
  - Denies hx of stuttering or other speech-language difficulty.
An Illustrative Case
An Illustrative Case
An Illustrative Case
An Illustrative Case (cont.)

Speech Dx – “Acquired stuttering, non-neuromotor in nature, most likely psychogenic”

Further tx scheduled

- He cancelled 2 appointments, probably for medical (GI, pain) issues, & did not reschedule
- No mention of stuttering in subsequent psychiatry or internal medicine notes over 2.5 months
- Discharged from care when he headed to VA system for tx of PTSD
Treatment – Common Steps

- Provide basic dx explanation
  - no serious neurological barriers
  - Previous adaptive strategy no longer helpful
  - Motivate - speech pattern can be changed with hard work

- Assertively work to change speech pattern
  - Begin with imitation of sounds, words (imitate, read, converse)
  - Alter rate, reduce muscle tension & extra movements (use touch)
  - Reinforce any change
  - Shape toward normal

- Make sure patient can explain the problem & its resolution
- Patient gets credit for change
- Follow-up
PTSD

- People prone to anxiety may be more susceptible to PTSD (Declerq & Willemsen, 2006).
- People with mild TBI appear more susceptible to PTSD than people who have suffered trauma without obvious TBI.
- There may be a bi-directional relationship between PTSD & neurocognitive functions (Vasterling & Verfallie, 2009).
- Cognitive slowing in PTSD “may be attributable to reduced attention due to a need to allocate resources to cope with psychological distress or unpleasant internal experiences” (Twamley et al., 2009, p.879).
PS Case #1 - History

59 year old woman seen in neurology

- 7 years ago: ? TIA (generalized weakness)
- 2 years ago: Two episodes of generalized weakness + jerking/flailing of limbs.
- 1 year ago - present: Intermittent gait difficulty & dyskinetic & tremor-like movements + “stuttering” without remission.
PS Case #1 - The Speech Problem

What are the salient speech abnormalities?

Are the abnormalities consistent with those encountered in neurologic disease?
PS Case #1 - Some more speech

- What has changed?
- What does it mean?
PS Case #1 - Some More History

- No prior hx of stuttering
- Stuttering began when leaving son’s wedding reception
  - Pt & husband opposed b/c inter-racial marriage & both quit college to get married; source of conflict & anxiety.
- Husband - heart transplant a few years ago.
- Loss of libido since hysterectomy > conflict
PS Case #1 - Outcome

- Neuro workup normal
  - (MRI, movement disorders lab, vestibular testing).

- Final neurologic Dx = “Functional speech, tremor, and gait disorders”
PS Case # 3

44 year old man

- 15 month Hx of tremor, L arm/leg weakness & speech difficulties following brainstem stroke.

- MRI: small brainstem infarct
PS Case # 3
PS Case #3 (cont.)

- **Psychiatry Consult**: Lifelong hx of cumulative stresses, frustrations, & disappointments. Concluded that psychological factors related to rage, anger, & repressed emotions were contributing to physical illness.

- **Final Neurologic Dx** = Neurologic symptoms, nonorganic.
  - Combined PM&R & psychiatric program
Management

“No one is a greater failure than the medical officer who wishes all hysterics could be shot at dawn.”

(Henry Head, 1922)
From: [Name]
To: Speech Rx

PREVIOUS CONSULTANT
Dr. [Name]

Referred for: Eval + Rx

Reason for Request: Dysthymia

Report: Neurologic vs Functional

GENERAL REFER  MC-48 Rev. 5-59
Consultation Requested: Speech Pathology

Reason for Request: 29 yo w/ abrupt onset multifocal CNS signs & sx. Please dissect & analyze speech/language.

CONSULTATIONS RECEIVED AFTER THE CUTOFF TIME LISTED IN SECTION 5 OF THE HOSPITAL PROCEDURE GUIDE WILL BE SEEN THE FOLLOWING DAY. EMERGENCY CONSULTATIONS ARE TO BE MADE BY PAGING THE APPROPRIATE SERVICE.

REQUESTING SERVICE: Neuro B

PHYSICIAN: M. Ferrella / J. B. Smith