The Psychological Assessment of Patients With CRPS:

Adapting the Method of Sherlock Holmes

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Conflict of Interest

- Co-author of two psychological tests designed for assessing patients with chronic pain
  - BHI 2
  - Battery For Health Improvement 2
  - BBHI 2
  - Brief Battery For Health Improvement 2

If There Is No Medical Explanation, What Could It Be?

- Normal
- Delayed

CRPS ?

No Objective Findings

Time

Pain
The Cost of Delayed Recovery

- The average delayed recoverer with back pain is 57X more expensive to treat
- Calculated from Frymoyer, 1991
- What makes these cases so expensive?

Once you have eliminated the impossible, whatever remains, however unlikely, must be the truth.

Sherlock Holmes

What Causes Pain?

- Descartes’ “bell tower” theory
  - Tissue damage “pulls the rope”, and rings the “pain bell” in the brain
- Much of medical training assumes pain is a sign of pathophysiology
  - ACOEM Tx Guidelines 1st ed
The Cartesian Model

- REAL: Pain from bodily tissue damage travels up the spinal cord and enters the passive MIND

- NOT REAL: If there is no tissue damage, then pain is produced by psychopathology

Research Has Consistently Shown that Descartes’ Theory is Not Correct

The brain is heavily involved in all pain perception

If the symptoms are impossible from a biomedical perspective

Is it all in their heads?
Case Vignette #1
Migraine Associated with TBI

Case Vignette #2
Traumatic Amputation of Foot With Phantom Pain

Case Vignette #3
CRPS
Pain is always subjective… It is unquestionably a sensation in part or parts of the body, but it is also always an unpleasant and therefore an emotional experience.

<table>
<thead>
<tr>
<th></th>
<th>Failed Lumbar Surgery</th>
<th>Successful Lumbar Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Abused</td>
<td>5%</td>
<td>95%</td>
</tr>
<tr>
<td>Abused</td>
<td>85%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Schofferman, et al, 1992 (Spine)
How could this happen?

We are just beginning to understand

Epigenetics

- Recent research has shown that stress and environmental events can modify gene functioning
  - These modifications can be passed on for several generations

- It is dynamic and potentially reversible.
  - Szyf, M., P. McGowan, et al., 2008; Weaver, Cervoni, et al., 2004; Meaney, M. J. and M. Szyf 2005

Research Findings

- Unexplained pain sx are associated reports of childhood victimization (Raphael, 2001)
Epigenetic Concepts

- Predictive adaptation (Gluckman, 2005)
- Epigenetic response to predation or famine
- “Spite the mother, fight the offspring”
- These responses increase survivability, while straining health

The HPA Axis

Hypothalamic-Pituitary-Adrenal

Wound Healing and the HPA Axis

- Individuals abused in childhood tend to have stronger HPA reactivity
- HPA reactivity associated with delayed wound healing
Stress and Infectious Disease

- Stress can:
  - increase the risk of infectious disease
  - affect the course of infectious disease
  - reactivate latent infectious disease
  - Ironson, et al 2002

- High cortisol levels are associated with septic shock and increased risk of mortality (Sam, et al 2004)

Factors That Could Impact Fusion Outcome

- Human growth hormone (HGH) accelerates bone regeneration and wound healing
  - Schmidmaier et al, 2002; Bail, et al, 2002

- Highest levels of HGH are released during deep sleep

- Depression and anxiety are known to interfere with sleep (DSM IV)

Prevalence of Axis I Disorders in Rehabilitation and Chronic Pain Facilities

- DSM IV Axis I disorders are prevalent in patients with injury and or chronic pain
  - 64% (Dersh, et al, 2002)
  - Compared to 15% in the general population (Dersh, et al)
Excessive Postsurgical use of opioids

- Aberrant postsurgical use of opioids is associated with a presurgical history of addiction
  - (Passik, S. D. and K. L. Kirsh (2004))
- Presurgical emotional distress leads to increased postsurgical pain and opioid use
  - Logan, 2005; Krohne, 2005; Svedman, 2005; Ozalp, 2003

The Perception of Pain

- f-MRI studies show that brain activity due to physical pain is very similar to that due to
  - Seeing a loved one in pain (Singer, 2004)
  - Imagined pain (Derbyshire, 2004)
- Cognitive catastrophizing heightens activity in pain centers of the brain (Gracely, 2004)

CRPS and Brain Changes Observed by fMRI

- “These abnormalities encompass emotional, autonomic, and pain perception regions”
- Low back pain & brain
- Fibromyalgia & brain
Is It All In Their Heads?

Response to Surgery Revisited

- Psychological factors affect
  - Healing process
  - Infection
  - Pain processing in the brain
  - Pain reports
  - Desire for opioids
  - Motivation to return to work

Applying Sherlock’s Model

To the extent that orthopedic explanations can be ruled out, psychosocial explanations are suggested.
What Should You Do?

Psychiatric disorders are overlooked by primary care physicians between 33% and 79% of the time (Higgins, 1994)

ACOEM Psych Guidelines For Chronic Pain

- Psych eval for all chronic pain conditions
- Psych eval prior to surgery for persistent pain
- Interdisciplinary pain rehabilitation
- Cognitive-behavioral therapy as an adjunct to an interdisciplinary treatment
- Biofeedback for select patients

- ACOEM, 2008
Colorado Guidelines Recommend Psych Evals:

- For chronic pain
- Prior to lumber fusion, artificial disc
- Prior to spinal cord stimulation
- Prior to back surgery if Waddell signs are > 2
- Prior to discography, facet rhizotomy, IDET

How Good Are Psychometric Tests?

- A review based on 125 meta-analyses and 800 studies concluded good psychometric tests are comparable to good medical tests in their ability to diagnose and predict outcome (Meyer, et al, 2001)

ACOEM Principles

It is important to use standardized psychological tests
Is This Clinically Elevated?

- Body temperature = 104º F
- Blood pressure = 152/110
- Blood sugar = 249
- Pain = 5?

(how much pain is normal?)

Pain Assessment
Not As Simple As It Looks

Pain is the only vital sign for which there have been no defined highs and lows

Rate your pain...
My Own Research

And Illustrative Case History

Validation of the BHI 2
And BBHI 2

- 2500 subjects at 106 sites in 36 US states
- Data gathered on both medical patients and community members
  - Two norm groups
  - Average American community member
  - Average American rehab patient
- Widely used, published by MMPI publisher

BHI 2

- Battery for Health Improvement 2
  - 35 minute standardized biopsychosocial test
  - Designed for comprehensive biopsychosocial assessment of medical patients
  - Paper and pencil or electronic administration
  - Computerized output
BBHI 2

- Brief Battery For Health Improvement 2
  - 8-10 minute standardized biopsychosocial test
  - Used by psychologists and physicians

Case Hx

- 39 year old female with chronic back and lower extremity pain
- Objective findings do not explain pain reports
- Uncooperative with examination
- No progress with any treatment
- Opioid dependent
- Is this CRPS?

Is This Really CRPS?

If there are no objective signs, is there an alternative explanation?
### Assessment of Biopsychosocial Risk Factors For Medical Treatment: A Collaborative Approach

- Bruns and Disorbio, 2009. Journal of Clinical Psychology in Medical Settings

- Consensus biopsychosocial “red flags” are identified and tested empirically

### Assessment of Biopsychosocial Risk Factors For Medical Treatment, Bruns and Disorbio, 2009

- Risk factors based on lit review
- Standardized assessment protocols
- Tested empirically with 10 groups
- Patient and community norms
- High reliability
- No gender or race bias
**Validity Scales**

Patient is disclosing an unusually high level of negative information. Motivated to look bad?

**Physical Symptom Scales**

Extreme diffuse pain associated with muscular bracing.

**Pain Complaints Items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Patient</th>
<th>Median*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head (headache pain)</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Jaw or face</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Neck or shoulders</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Arms or hands</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Chest</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Abdomen or stomach</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Middle back</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Lower back</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Genital area</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Leg or feet</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Overall highest level of pain in the past month</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Overall lowest level of pain in the past month</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Overall pain level at time of testing</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>

*Maximum Tolerable Pain

**Pain Dimensions**

- Peak Pain
- Pain Tolerance Index

*Based on a sample of 316 patients with lower back pain/injury.
Affective Scales

More depression than 92% of patients

Character Scales

High level of borderline traits = unstable love/hate relationships.
Also dependent and hx of poor coping

Low Perseverance = “I give up.”

Psychosocial Scales

Loves the doctor - For now?

Reports conflict in both home and work settings.
Hx of emotional trauma, resists examination
Case Hx: Critical Items

Pain
If There Is No Orthopedic Explanation, What Could It Be?

Cannot cope with pain or stress at work

Normal
Delayed
Abusing opioid pain Rx

Reasons for Delay
Time
Anxiety and severe insomnia due to HPA hyperreactivity slows healing
Hires Attorney

Survivor of Violence
Hx of emotional trauma and poor coping

Cannot cope with pain or stress at work

Abusing opioid pain Rx

Cannot cope with pain or stress at work

Time

Conclusion

■ Is the lack of recovery due to CRPS?

■ To the extent that medical explanations are unlikely, psychosocial explanations are more likely
**Conclusion**

- Diffuse pain associated with
  - Depression and suicidality
  - Hx emotional trauma
  - Borderline & dependent personality
  - Extreme pain intolerance
  - Muscular bracing/ chronic muscle contraction pain

- Excessive opioid use - Why?

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**Borderline patient loves doctor now, but what happens when you say “We have to cut back on the opioids?”**

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**Treatment Plan**

- Assess suicidal ideation, use safety contract
- Treat depression with Rx and psychotherapy
- Treat muscular bracing with relaxation training or biofeedback
- Use cognitive psychotherapy to increase pain tolerance
- Manage unrelated psych conditions, and refer for Tx for trauma and personality disorder outside the WC system
- Use opioid contract and wean off pain Rx
Treatment of CRPS

- Treat
  - Depression and anxiety
  - Arousal
  - Insomnia
  - Dysfunctional cognitions
  - Movement fears

If you don’t know the psych diagnosis, you can get blindsided

“And then, WHAM! This thing just came right out of left field.”

Sherlock Revisited

- When a patient’s symptoms do not seem medically possible, the explanations that remain are psychological, psychophysiological and social

- If you are alert to psychosocial factors from the outset, you can take much of the mystery out of CRPS