Neuropsychological Testing in mTBI: The Problem with PCS

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Disclosures

- None
There is no measurable cognitive impairment in mild uncomplicated TBI 3 months post injury


The Miserable Minority?

- Estimated 15% of patients with mTBI have chronic, persisting symptoms
- Two studies typically referenced for this estimate
- Both studies are based entirely on self-report
The (myth) of the Miserable Minority?

- McLean (1983)
  - Followed patients for only 1 month
  - 9 of 20 patients with GCS of 12 or lower, 4 w/ abnormal imaging
- Rutherford (1979)
  - 19 of 131 (14.5%) remained symptomatic 1 year after concussion
- “Of the 19 patients who had symptoms at 1 year, 8 were involved in law suits and 6 had been suspected of malingering 6 weeks after their accident. Five of these patients were both involved in law suits and suspected of malingering”
Verbal memory complaints versus verbal memory test scores

Zero correlation in 995 cases

Rsq = 0.0000
Post-Concussion Syndrome

- Persistent symptoms outside of the normal recovery window (typically >3 months)
  - Headache
  - Irritability, emotional lability, depression/anxiety
  - Fatigue/malaise
  - Sleep disturbance
  - Cognitive complaints
  - Dizziness
<table>
<thead>
<tr>
<th>BC-PSI items</th>
<th>Mild endorse</th>
<th>Mod/severe endorse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headaches</td>
<td>59.4</td>
<td>28.1</td>
</tr>
<tr>
<td>Dizziness/light-headed</td>
<td>31.2</td>
<td>10.9</td>
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<tr>
<td>Nausea/feeling sick</td>
<td>40.6</td>
<td>10.9</td>
</tr>
<tr>
<td>Fatigue</td>
<td>85.6</td>
<td>57.8</td>
</tr>
<tr>
<td>Extra sensitive to noises</td>
<td>50.0</td>
<td>18.8</td>
</tr>
<tr>
<td>Irritable</td>
<td>76.6</td>
<td>35.9</td>
</tr>
<tr>
<td>Sadness</td>
<td>76.6</td>
<td>56.3</td>
</tr>
<tr>
<td>Nervous or tense</td>
<td>65.6</td>
<td>35.9</td>
</tr>
<tr>
<td>Temper problems</td>
<td>37.5</td>
<td>15.6</td>
</tr>
<tr>
<td>Poor concentration</td>
<td>78.1</td>
<td>46.9</td>
</tr>
<tr>
<td>Memory problems</td>
<td>70.3</td>
<td>42.2</td>
</tr>
<tr>
<td>Difficulty reading</td>
<td>40.6</td>
<td>23.4</td>
</tr>
<tr>
<td>Poor sleep</td>
<td>78.1</td>
<td>53.1</td>
</tr>
</tbody>
</table>

Contributions to development of PCS

- Iatrogenic Illness – Illness by diagnosis
  - Misinformation at ED, online
- Stereotype Threat/Diagnosis Threat
  - Suhr & Gunstad (2002, 2005)
- Nocebo effect – Causation of sickness by expectation of sickness (APOE4)
- Poor treatment recommendations
  - Deconditioning
Psychological barriers influencing recovery/symptom reporting

- Premorbid factors – mood, personality styles
  - Overachievement, dependency, insecurity, grandiosity, and borderline traits proposed to leave people vulnerable to poor outcome with mtbi
- Depression and anxiety more strongly associated with PCS than head injury status (Trahan, Ross, & Trahan, 2001)
- “Good Old Days” bias
- Misattribution – fundamental need to have an explanation
  - Healthy people experience PCS sx on a daily basis
- Litigation/Disability
Effect sizes of neuropsychological functioning
Other considerations for prolonged symptoms

- Neck injuries
- Vestibular dysfunction
- Sleep disruption and changes in sleep/wake cycle
Neuropsychological Testing

- Establish severity of injury – acute injury characteristics
- What were they told about recovery?
- What did they do during the subacute phase?
- Have they been assessed and treated for secondary medical conditions?
- Are they in litigation?
- What is the psychiatric history?
- What is the extent of their cognitive complaints?
  - Objective neuropsychological data
  - Effort Testing
Treatment Recommendations

- Provide education
- Explain what may have gone wrong in their recovery
- Psychiatric recommendations as appropriate
- If test results WNL, provide assurance of intact cognition
- Graded increase physical/social activity
- Sleep hygiene
- Refer to concussion specialist
References


