Identifying and Treating PTSD in TBI Patients

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PTSD Rates

- 1995 Study of civilians – lifetime prevalence of PTSD was 5% men and 10% women.
- Most people exposed to a traumatic event experience symptoms in the days/weeks following – disorder of non-recovery.
- Data suggest that about 8% men and 20% women develop PTSD, and roughly 30% of these develop a chronic disorder.
- About 20–30 percent of the men/women who have spent time in combat experience PTSD.
- 7.8 percent of Americans will experience PTSD at some point in their lives.
What is PTSD

- A: Stressor *(cause of symptoms)*
- B: Intrusion Symptoms *(symptoms interfere with normal actions)*
- C: Avoidance *(staying away from difficult situations, locations, etc.)*
- D: Negative alterations in cognitions and *mood* *(range of difficulty in thinking and controlling mood)*
- E: Alterations in arousal and reactivity *(range of difficulty in ability to respond to situations)*
- F: Duration *(length of time symptoms have existed)*
- G: Functional significance *(impact on ability to carry out activities)*
- H: Exclusion *(symptoms are not due to other causes)*

Source: http://www.ptsdalliance.org
Who Develops PTSD?

- Genes
- Temperament
- Family environment
- Trauma characteristics – age, chronicity, predictability, trust in perpetrator
- Post-trauma *perceived* social support

- PTSD is *interrupted* recovery
Recovery From PTSD

- Begins with normal response to extraordinary events
- Behavior that is adaptive during trauma:
  - Hypervigilance
  - Increase Arousal
  - Emotional Numbing
- Can lead to difficulty later
- When recovery does not occur on its own, PTSD can develop
- Increased risk of PTSD with chronic trauma, e.g. multiple deployments (Thomas et al, Arch Gen Psych, 2010)
Protective Factors

- Temperament
- Family environment
- Coping skills
- Supportive network
- Perceived “safe place”
- Someone to talk with about the event(s)
Biology of PTSD

- Genes
- Classical Fear Conditioning
- Neuroanatomy
  - Amygdala
  - Medial Prefrontal Cortex
- Neurophysiology
  - Normal stress cycle
  - Norepinephrine
  - HPA Axis and Cortisol
Numerous studies show increased amygdala activity in PTSD

Degree of activation correlates with re-experiencing and nightmares

Amygdala in those with PTSD fails to habituate to traumatic stimuli = amygdala hijacking

Medial Prefrontal Cortex (mPFC)

- Provides “top-down”, frontal lobe control over the amygdala
  - Area includes the anterior cingulate cortex (ACC)

- Hypoactive mPFC doesn’t manage amygdala and leads to higher autonomic arousal and exaggerated responses

# Lifetime DSM-IV Psychiatric Comorbidity among NESARC* respondents by PTSD status (Pietrzak et al, 2011)

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Without PTSD</th>
<th>PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDD</td>
<td>14.3</td>
<td>35.2</td>
</tr>
<tr>
<td>Bipolar Type I</td>
<td>3.8</td>
<td>19.1</td>
</tr>
<tr>
<td>Any other Anxiety D/O</td>
<td>22.2</td>
<td>59.0</td>
</tr>
<tr>
<td>Alcohol Abuse/Dependence</td>
<td>34.9</td>
<td>41.8</td>
</tr>
<tr>
<td>Drug Abuse/Dependence</td>
<td>11.4</td>
<td>22.3</td>
</tr>
<tr>
<td>Nicotine Dependence</td>
<td>21.9</td>
<td>37.9</td>
</tr>
<tr>
<td>Lifetime Suicide Attempt</td>
<td>2.3</td>
<td>13.9</td>
</tr>
</tbody>
</table>

*National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)*
PTSD and Medical Conditions
(Pietrzak et al 2012)

- People with PTSD are more likely than the general population to have higher rates of:
  - Diabetes
  - non-cirrhotic liver disease
  - Heart Disease
    - Angina pectoris
    - Tachycardia
    - Hypercholesterolemia
    - angina pectoris
  - Arthritis
  - Stomach ulcer

Even after adjusting for sociodemographic characteristics and comorbid psychiatric diagnoses
Shared Anatomy of TBI & PTSD

Stein & McAllister 2009
How Do We Treat PTSD, PCS (and depression)?
Pharmacotherapy (2nd line)

- Pharmacotherapy: Monotherapy
  - Strongly recommend SSRI’s (fluoxetine, paroxetine or sertraline have strongest support), or SNRI’s (venlafaxine has the strongest support) for treatment of PTSD [A]
  - Recommend mirtazapine, nefazodone*, TCA’s, MAOIs*
  - Evidence is against use of benzodiazepines

* New cautions on these medications
Prolonged Exposure (PE) was developed by Edna Foa.

- 8–15, 90 minute individual sessions
- Based on Emotional Processing Therapy
- Exposure includes:
  - habituation
  - Retelling the story
  - improved confidence and discrimination skills
  - Going to places that you have been avoiding
Cognitive Processing Therapy

- An 8–15 session protocol, developed in 1988 by Patricia Resick.
- Predominantly a cognitive therapy, with or without written accounts of worst traumas.
- Very specific session-by-session content that teaches the clients to challenge their own thoughts.
- Can be implemented individually, in group or a combined format.
- Recovery-focused and based on collaboration and informed choice.
- A couples based treatment option is also available.
PTSD Treatment Outcomes
Cincinnati VA Residential Program

Chard et al., JTS 2011
TBI/PTSD Comparison to No-TBI/PTSD

Res=140 Out pt=40, TBI=42
## PTSD and NSI Data

### Table 1

*Psychometric Properties of the Major Study Variables*

<table>
<thead>
<tr>
<th>Measure</th>
<th>Range</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Potential</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>CAPS, Total Score</td>
<td>0-136</td>
<td>74.68</td>
<td>17.44</td>
</tr>
<tr>
<td>PCL, Summary Score</td>
<td>0-85</td>
<td>61.43</td>
<td>11.33</td>
</tr>
<tr>
<td>NSI, Summary Score</td>
<td>0-88</td>
<td>54.25</td>
<td>12.53</td>
</tr>
</tbody>
</table>

*Note.* N=28; CAPS = Clinician Administered PTSD Scale. PCL = PTSD Checklist. NSI = Neurobehavioral Symptom Inventory.
PTSD, TBI, Depression

Figure 1

Group Mean PCL Scores at Pre-, Mid-, and Post-treatment

![Graph showing mean PCL scores across assessment time points.]

Figure 2

Group Mean BDI Scores at Pre-, Mid-, and Post-treatment

Note. N=47; BDI = Beck Depression Inventory; PTSD/TBI = Veterans with a diagnosis of posttraumatic stress disorder and a history of traumatic brain injury; PTSD/TBI/MDD = Veterans with a diagnosis of posttraumatic stress disorder, a history of traumatic brain injury, and a diagnosis of major depressive disorder.
Conclusions

- Important to assess for PTSD in patients with a history of TBI
- Many self reported PCS symptoms may in fact be due to PTSD and can improve after treatment
- TBI patients can tolerate and effectively manage Cognitive Behavioral treatments for PTSD and related symptoms.
Questions?