Assessment and Treatment of Traumatic Brain/Head Injury in Survivors of Torture

Richard F. Mollica, MD, MAR and Altaf Saadi, MD MSc

February 8th, 2024
Overview

• This webinar is brought to you today by the Office of Refugee Resettlement.

• The National Capacity Building Project is a project of the Center for Victims of Torture in partnership with Harvard Program in Refugee Trauma and the National Consortium of Torture Treatment Programs.
We will be talking about trauma today. Trauma impacts all in different ways but it is something we have all had some experience with. The information, images, and discussions can be triggering or uncomfortable at times. Make sure you monitor and take care of yourself when and if you need to.
After attending this webinar, participants will be able to:

- Recall the historical significance of identifying THI/TBI in survivors of extreme violence
- Understand the neuroscience of THI/TBI in survivors of torture
- Recognize the high prevalence of THI/TBI in survivors of torture
- Recognize how traumatic brain injury results in heterogeneous symptoms, which vary depending on the nature, mechanisms, and severity of injury
- Learn common tools for screening for TBI and post-concussive symptoms
- List the interventions used to treat TBI symptoms and recognize when and where to refer people with TBI for evaluation and treatment
Why THI/TBI is Not Readily Identified and Treated in Torture Survivors?

1. Primary care practitioners are not trained to identify and refer THI/TBI patients.
2. No simple, valid and reliable screening instruments with good psychometric properties.
3. The patient and/or family does not recognize THI and the resulting symptoms of TBI as a medical problem. In many cultures a “folk diagnosis” does not exist for the presence of an organic brain syndrome. The symptoms of TBI are usually considered as “emotional” or as a negative character trait that is under the person’s willful control.
Why THI/TBI is Not Readily Identified and Treated in Torture Survivors?

4. The most common enduring symptoms of THI/TBI overlap with other psychiatric problems such as PTSD and depression:

- Poor executive functioning: planning, organizing, learning
- Impaired concentration
- Memory problems
- Easily confused
- Headache
- Photosensitivity
- Fatigue
- Depression symptoms
- Irritability
- Anxiety symptoms
Why THI/TBI is Not Readily Identified and Treated in Torture Survivors?

5. THI/TBI diagnosis can be hidden behind the diagnosis of PTSD, depression, anxiety disorders, and substance abuse.

6. Strategies for treatment have not been developed for primary healthcare and community-based torture treatment centers.

7. Linkages of primary healthcare and community-based torture treatment centers to specialized THI/TBI government-provided resources (state, VA) are weak, especially for non-English speaking patients.
The Norwegian Investigation (1961)

- n = 100 concentration camp survivors (out of 300).
- All had been systematically tortured.
- Most common torture: blows and kicks to the head, often with serious sequelae (e.g., loss of consciousness).
- Defined for the first time as the “concentration camp syndrome”.

Symptomatology of the Concentration Camp Syndrome

- Failing Memory And Difficulty Concentrating
- Nervousness, Irritability and Restlessness
- Fatigue
- Nightmares and/or Sleep Disturbances
- Headaches
- Emotional Instability
- Dysphoric Moodiness
- Vertigo
- Loss of Initiative
- Feelings of Insufficiency
Concentration Camp Syndrome in Relation to Conditions during Imprisonment

<table>
<thead>
<tr>
<th>FACTORS</th>
<th>TOTAL (n - %)</th>
<th>≥ 7 SYMPTOMS n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loss of Weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• More than 30%</td>
<td>61</td>
<td>47 (77%)</td>
</tr>
<tr>
<td>• Less than 30%</td>
<td>17</td>
<td>6 (35%)</td>
</tr>
<tr>
<td>2. Captivity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Severe Degree</td>
<td>69</td>
<td>50 (77%)</td>
</tr>
<tr>
<td>• Moderate Degree</td>
<td>31</td>
<td>15 (48%)</td>
</tr>
<tr>
<td>3. Head Injury</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• (+)</td>
<td>50</td>
<td>39 (78%)</td>
</tr>
<tr>
<td>• (-)</td>
<td>50</td>
<td>26 (50%)</td>
</tr>
</tbody>
</table>

The Norwegian Investigation (1961)

- THI highly correlated with concentration camp syndrome (78%).
- 75% of the sample had abnormal pneumoencephalographic findings.

“Our figures . . . confirm the assumption that organic brain changes produced by the various traumatic situations reported . . . form the basis of the concentration camp syndrome.”

Leo Eitinger - 1961
Traumatic Head Injury/Traumatic Brain Injury (THI/TBI)

An injury to the brain, whether or not it is associated with lasting functional impairment. The exact nature of the symptoms depends upon the type and severity of the injury. Injuries include penetrating injuries, closed head injuries, and exposure to blasts. Disruptions in brain functioning can include a decreased level of consciousness amnesia, or other neurological or neuropsychological abnormalities.

### Mechanisms of Injury

<table>
<thead>
<tr>
<th>Injury Type</th>
<th>Injury with loss of consciousness (n=124)</th>
<th>Injury with altered mental status (n=260)</th>
<th>Other injury (n=435)</th>
<th>No injury (n=1706)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blast or explosion</td>
<td>79%</td>
<td>72.7%</td>
<td>23.2%</td>
<td>-</td>
</tr>
<tr>
<td>Bullet</td>
<td>4.8%</td>
<td>0.8%</td>
<td>1.6%</td>
<td>-</td>
</tr>
<tr>
<td>Fragment or shrapnel</td>
<td>25%</td>
<td>18.5%</td>
<td>8%</td>
<td>-</td>
</tr>
<tr>
<td>Fall</td>
<td>30.6%</td>
<td>28.1%</td>
<td>43.7%</td>
<td>-</td>
</tr>
<tr>
<td>Vehicle accident</td>
<td>30.6%</td>
<td>18.1%</td>
<td>13.3%</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>12.9%</td>
<td>8.8%</td>
<td>33.8%</td>
<td>-</td>
</tr>
</tbody>
</table>

### US Veterans’ Study (2008)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Injury with loss of consciousness (n=124)</th>
<th>Injury with altered mental status (n=260)</th>
<th>Other injury (n=435)</th>
<th>No injury (n=1706)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD</td>
<td>44%</td>
<td>27%</td>
<td>16%</td>
<td>9%</td>
</tr>
<tr>
<td>Depression</td>
<td>23%</td>
<td>8%</td>
<td>7%</td>
<td>≥ 3%</td>
</tr>
</tbody>
</table>

Vietnamese Ex-Political Detainee Story
Vietnamese Ex-Political Detainee Story
Demographics of Study Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n=82)</th>
<th>Ex-Detainees (n=337)</th>
<th>P-value</th>
<th>Ex-Detainees w/o THI (n=210)</th>
<th>Ex-Detainees w/ THI (n=127)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>62.4</td>
<td>60.5</td>
<td>.26</td>
<td>61.2</td>
<td>59.4</td>
<td>.10</td>
</tr>
<tr>
<td>Marital Status (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Married</td>
<td>75.6</td>
<td>79.8</td>
<td>.011</td>
<td>81</td>
<td>78</td>
<td>.012</td>
</tr>
<tr>
<td>• Div/Sep</td>
<td>9.8</td>
<td>13.4</td>
<td>11</td>
<td>17.3</td>
<td>11</td>
<td>.012</td>
</tr>
<tr>
<td>• Widowed</td>
<td>4.9</td>
<td>4.7</td>
<td>4.8</td>
<td>4.7</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>• Single</td>
<td>9.4</td>
<td>2.1</td>
<td>3.3</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of Education</td>
<td>8.6</td>
<td>11.2</td>
<td>&lt;.001</td>
<td>11.5</td>
<td>10.9</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n=82)</th>
<th>Ex-Detainee (n=337)</th>
<th>P-value</th>
<th>Ex-Detainees w/o THI (n=210)</th>
<th>Ex-Detainees w/ THI (n=127)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years in Re-education Camps (Mean)</td>
<td>N/A</td>
<td>6.5</td>
<td>N/A</td>
<td>6.6</td>
<td>6.3</td>
<td>.549</td>
</tr>
<tr>
<td># Trauma Events (Median)</td>
<td>1</td>
<td>13</td>
<td>&lt;.001</td>
<td>12</td>
<td>15</td>
<td>&lt;.001</td>
</tr>
<tr>
<td># Torture Events (Median)</td>
<td>0</td>
<td>7</td>
<td>&lt;.001</td>
<td>6</td>
<td>10</td>
<td>&lt;.001</td>
</tr>
<tr>
<td># Events of Torture and Trauma (Median)</td>
<td>1</td>
<td>20</td>
<td>&lt;.0001</td>
<td>17.5</td>
<td>25</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>
The Number and Percent of Vietnamese Ex-Political Detainees Reporting Each Type of Head Injury Across Time

<table>
<thead>
<tr>
<th>Type of Head Injury</th>
<th>Ex-Political Detainees (N=337)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td>Explosion</td>
<td>158</td>
</tr>
<tr>
<td>Beaten on head</td>
<td>68</td>
</tr>
<tr>
<td>Shrapnel</td>
<td>58</td>
</tr>
<tr>
<td>Fall for other reason</td>
<td>55</td>
</tr>
<tr>
<td>Suffocation</td>
<td>47</td>
</tr>
<tr>
<td>Fall out of vehicle</td>
<td>40</td>
</tr>
<tr>
<td>Fall from fatigue</td>
<td>36</td>
</tr>
<tr>
<td>Hit head against dashboard</td>
<td>19</td>
</tr>
<tr>
<td>Work accident</td>
<td>15</td>
</tr>
<tr>
<td>Drowning</td>
<td>9</td>
</tr>
<tr>
<td>Whiplash</td>
<td>9</td>
</tr>
<tr>
<td>Shot in head</td>
<td>7</td>
</tr>
<tr>
<td>Strangulation</td>
<td>6</td>
</tr>
<tr>
<td>Other head injury</td>
<td>5</td>
</tr>
<tr>
<td>Hit by vehicle</td>
<td>3</td>
</tr>
<tr>
<td>Hit head while trying to escape from camp</td>
<td>2</td>
</tr>
</tbody>
</table>

Depression and PTSD in Ex-Political Detainees vs. Controls

Depression and PTSD in Ex-Political Detainees with THI

Psychiatric Morbidity in Ex-Political Detainees’ Additive Impact of THI

We considered a participant to be head-injured if they reported at least one head injury during any time period. However, to qualify, the head injury had to be associated with memory problems, loss of consciousness, and at least one other neurological symptom (e.g., trouble walking, talking, thinking, seeing or feeling ill).
Participant Flow Through a Large-Scale Epidemiologic Survey Of Vietnamese Ex–Political Detainees And Non-Traumatized Controls

Statistical Thickness Difference Maps Between THI-Exposed Ex-political Detainees and Ex-Political Detainees Who Had Not Experienced THI

Relationship Between Severity of Depression Measured by the Hopkins Symptom Checklist–25 (HSCL) and Cortical Thickness of Brain Regions that were Related to THI in Each Ex–Political Detainee Group

Vietnamese ex-political detainees with THI has cortical thinning in the following brain areas:

- Left superior frontal cortex (SFC)
- Left middle frontal cortex (MFC)
- Left superior temporal cortex (STC)
- Right superior temporal cortex (STC)
- Right posterior cingulate cortex (PCC)
- Left paracentral cortex

Vietnamese ex-political detainees with trauma/torture had cortical thinning in the following brain area:

- Amygdala volume loss
Prevalence of THI in SOT Programs

New York University/Bellevue Program for Survivors of Torture (PSOT) Study (2008-2011)

Males = 304, 62.3%
Average Age: 35.7


<table>
<thead>
<tr>
<th>Table 1: Participant characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Region of origin</strong></td>
</tr>
<tr>
<td>West Africa</td>
</tr>
<tr>
<td>East Asia</td>
</tr>
<tr>
<td>Central Africa</td>
</tr>
<tr>
<td>South Asia</td>
</tr>
<tr>
<td>Eastern Europe</td>
</tr>
<tr>
<td>Americas</td>
</tr>
<tr>
<td>Western Europe</td>
</tr>
<tr>
<td>Middle East</td>
</tr>
<tr>
<td>Africa, other</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Religion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muslims</td>
</tr>
<tr>
<td>Christians</td>
</tr>
<tr>
<td>Buddhists</td>
</tr>
<tr>
<td>Jews</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Torture category</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States definition</td>
</tr>
<tr>
<td>United Nations definition</td>
</tr>
<tr>
<td>World Medical Association definition</td>
</tr>
<tr>
<td>Proficient in English</td>
</tr>
</tbody>
</table>

Among the treatment-seeking survivors of torture in this sample, 69% reported sustaining a blow to the head as a result of torture.

Reported headaches and sleep disturbances.

THI/TBI can be a major barrier to recovery.
The Silent Epidemic of Domestic Violence (DV) and TBI

- One in four women experience severe violence from a domestic partner.
- 75% experience a single or repeated traumatic brain injuries.
- Most DV-TBI go unreported.

Impact of THI/TBI

Five-year outcomes of persons with TBI*

- 22% Died
- 30% Became Worse
- 22% Stayed Same
- 26% Improved

*Data are US population estimates based on the TBIMS National Database. Data refer to people 16 years of age and older who received inpatient rehabilitation services for a primary diagnosis of TBI.

Source: https://www.cdc.gov/traumaticbraininjury/moderate-severe/index.html
Long-term negative effects of TBI are significant.

Even after surviving a moderate or severe TBI and receiving inpatient rehabilitation services, a person’s life expectancy is 9 years shorter. TBI increases the risk of dying from several causes. Compared to people without TBI, people with TBI are more likely to die from:

- **Seizures**: 50 x more likely
- **Drug Poisoning**: 11 x more likely
- **Infections**: 9 x more likely
- **Pneumonia**: 6 x more likely

Source: [https://www.cdc.gov/traumaticbraininjury/moderate-severe/index.html](https://www.cdc.gov/traumaticbraininjury/moderate-severe/index.html)
Traumatic Head Injury (THI)/Traumatic Brain Injury (TBI) is one of the most common and least recognized medical/mental health problems in survivors of torture.
Traumatic Head Injury (THI)/Traumatic Brain Injury (TBI) and severe trauma are highly associated, leading to severe cognitive deficits, mental health disorders, and major physical and social disabilities.

Conclusion
Altaf Saadi, MD MSc
Not all head injuries are traumatic brain injuries.
CDC defines TBI as a "disruption in the normal function of the brain that can be caused by a bump, blow, or jolt to the head or a penetrating head injury."

- Observing one of the following clinical signs constitutes an alteration in brain function:

  - Any period of loss of or decreased consciousness
  - Any loss of memory: retrograde amnesia, post-traumatic amnesia
  - Alterations in mental status
  - Neurological deficits

Source: Asylum Medicine Training Initiative Module 8
Not all brain injuries are traumatic brain injuries.
TBI Severity

Mild:
- Loss of consciousness (LOC) <30 minutes (can involve no LOC at all but an alteration in consciousness)
- Post-traumatic amnesia <24 hours

Moderate-severe:
- LOC >30 min
- Post-traumatic amnesia >24 hours
TBI Symptoms

**Somatic**
- Vestibular
- Nausea
- Headache

**Affective**
- Anxious
- Impulsivity

**Cognitive**
- Difficulty
- Concentrating
- Inattention
- Disorientation
TBI Recovery

TBI and Psychosocial Factors

Brain injury survivors are more likely to develop PTSD and other psychiatric conditions.

Precedent or co-occurring psychiatric conditions prolong brain injury recovery.

There are syndromic overlaps between brain injury symptoms and symptoms of common psychiatric disorders.

Other psychosocial factors that impede recovery include disability/unemployment, cognitive reserve, financial setbacks.

ASYLUM MEDICINE TRAINING INITIATIVE
Ohio State University TBI Identification Method

Source: The OSU TBI Identification Method, adapted from Corrigan and Bogner's (2007) study, demonstrated initial reliability and validity.
| H | Have you ever Hit your Head or been Hit on the Head?  
  * This question should include any potential incidents that may have occurred at any age. |
|---|---|
| E | Were you ever seen in the Emergency room, hospital, or by a doctor because of an injury to your head?  
  * There is recognition that not all individuals with a serious head injury can afford or seek hospital-based care. |
| L | Did you ever Lose consciousness or experience a period of being dazed and confused because of an injury to your head?  
  * An alteration in consciousness |
| P | Do you experience any of these Problems in your daily life since you hit your head?  
  * Headaches  Anxiety  Difficulty concentrating  Difficulty reading, writing, calculating  Poor judgment  Changes in relationships  Dizziness  Depression  Difficulty remembering  Difficulty performing at job/school work  Poor problem solving |
| S | Any significant Sicknesses?  
  * To rule out other causes of acquired brain injury (e.g., brain tumor, meningitis, etc.) |

The original HELPS TBI screening tool was developed by M. Picard, D. Scarisbrick, R. Paluck, 9/91, International Center for the Disabled, TBI-NET, U.S. Department of Education, Rehabilitation Services Administration, Grant #H128A00022.
Symptom Checklists

- Glasgow Coma Scale
- Neurobehavorial Symptom Inventory
- Rivermead Post-Concussion Symptom Scale
- Post-Concussion Symptom Scale
- Standardized Assessment of Concussion

Cognitive Screening

- Montreal Cognitive Assessment (recognizing multiple versions, MOCA-B)
- St. Louis University Mental Status Exam (SLUMS)
- Rowland Universal Dementia Assessment Scale (RUDAS)

**Recognize inherent limitations in cognitive screening, need for adjustments, assessing across multiple cognitive domains, and potential need for neurologic or neuropsychological assessment.**


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<table>
<thead>
<tr>
<th>Cognitive domain</th>
<th>Question*</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>Given 4 grocery items to register (and recall later)</td>
<td>0</td>
</tr>
<tr>
<td>Visuospatial orientation</td>
<td>Left/right orientation with body parts</td>
<td>5</td>
</tr>
<tr>
<td>Praxis</td>
<td>Alternating hand movements with fist and palm</td>
<td>2</td>
</tr>
<tr>
<td>Visuoconstructual drawing</td>
<td>Copying Image of a cube</td>
<td>3</td>
</tr>
<tr>
<td>Judgment</td>
<td>Safety precautions when crossing a street</td>
<td>4</td>
</tr>
<tr>
<td>Memory recall</td>
<td>Recalling 4 grocery items from above</td>
<td>8</td>
</tr>
<tr>
<td>Language</td>
<td>Animal naming in 1 minute</td>
<td>8</td>
</tr>
</tbody>
</table>

Total score /30

Major and Minor Cognitive Disorder

**Major Neurocognitive Disorder**
- **Criterion A:** Significant cognitive decline
- **Criterion B:** Interferes with independence
- **Criterion C:** Not due to delirium
- **Criterion D:** Not due to other mental disorders

**Minor Neurocognitive Disorder**
- **Criterion A:** Moderate cognitive decline
- **Criterion B:** Does not interfere with independence
- **Criterion C:** Not due to delirium
- **Criterion D:** Not due to other mental disorders
The overwhelming majority of patients with mild brain injury show no imaging abnormality, either on CT or MRI.
<table>
<thead>
<tr>
<th>History Taking</th>
<th>Examination</th>
<th>Refer, if needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Screening for brain injury</td>
<td>1. Observe for behavioral clues even before formal examination</td>
<td>1. Neurology</td>
</tr>
<tr>
<td>5. Obtain collateral, if possible</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
You must include each element of **DONE** in order to successfully complete the form for your patient:

- **DIAGNOSIS:** The nature of the illness or disability described in lay terms, as if you are describing it to a middle school student
- **ORIGIN:** The origin of the disability or illness described in lay terms
- **NEXUS:** the specific symptoms associated with the disability or illness that make it impossible for the applicant to learn English and/or U.S. Civics;
- **EFFECT:** your conclusion that the applicant cannot learn English and/or U.S. Civics.

In addition:

1. Provide specific examples of the way in which your patient's symptoms affect cognitive functioning. Clearly state whether the disability affects the patient's ability to learn English, civics, or both.
2. Use clear and unequivocal language, e.g. “As a result of his disabilities, Mr. X will not be able to learn English or civics sufficiently to pass the citizenship exam.”

- **POST TRAUMATIC STRESS DISORDER AND DEPRESSION:** Ms. D suffers from major depression, recurrent and severe, with a history of suicidal ideation resulting in multiple in-patient psychiatric hospitalizations. Ms. D currently receives medication and treatment for depression to control the desire to harm herself. She does not pose a threat to others. She also has been diagnosed with Post Traumatic Stress Disorder related to war trauma in Bosnia which persists through nightmares and flashbacks.

- **DEMENTIA:** The patient has severe dementia. Dementia is the loss of intellectual functioning which is significant enough to interfere with daily life. It is not caused by depression or mental illness. It progressively worsens over time and is irreversible. It is present in Ms. N. in the form of forgetfulness, impairments in understanding, reasoning, learning and language.
Disability Exemption for Citizenship
N-648

Eligibility

Must be unable to meet the English and civics requirements due to a medically determinable physical or developmental disability or mental impairment that has lasted, or is expected to last, at least 12 months

- there must be a nexus between the diagnosis and the inability to learn English/civics
- age on its own is not sufficient
- illiteracy is not sufficient (and mentioning is usually counterproductive)

Introduction to US Citizenship & Medical Disability Waivers
Traumatic Brain Injury

Additional References


Disability Exemption for Citizenship N-648 Additional Resources

- EthnoMed: https://ethnomed.org/resource/disability-exception-for-citizenship-n-648/

- MGH Center for Immigrant Health Webinar: https://youtu.be/omfszOd6fdU?si=t7V8iYsosPtCWKCB
Traumatic Brain Injury

Additional References


Please add your questions to the Q&A and we will facilitate them to the presenters.

Have a questions after the presentation?
Here is the contact information for our presenters:

- Name: Altaf Saadi, MD, MSc
  - Email: asaadi@mgh.Harvard.edu

- Name: Richard F. Mollica, MD, MAR
  - Email: rmollica@mgh.Harvard.edu
  - Website: hprt-cambridge.org
The National Capacity Building Project is a project of the Center for Victims of Torture in partnership with Harvard Program in Refugee Trauma and the National Consortium of Torture Treatment Programs.

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More resources are available at www.healttorture.org.