National Capacity Building Project: Technical Assistance of the Survivor of Torture Programs

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.

Disclaimer

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.

Objectives

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

Presenters

Harvard Program in Refugee Trauma | Massachusetts General Hospital | Harvard Medical School

Richard F. Mollica, MD, MAR

Altaf Saadi, MD, MSc

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".

Eitinger, L. (1961). Pathology of the concentration camp syndrome: Preliminary report. *Archives of General Psychiatry, 5*(4), 371-379.

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

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

Eitinger, L. (1961). Pathology of the concentration camp syndrome: Preliminary report. *Archives of General Psychiatry, 5*(4), 371-379.

The Norwegian Investigation (1961)

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

Eitinger, L. (1961). Pathology of the concentration camp syndrome: Preliminary report. *Archives of General Psychiatry, 5*(4), 371-379.

The Norwegian Investigation (1961)

"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

Eitinger, L. (1961). Pathology of the concentration camp syndrome: Preliminary report. *Archives of General Psychiatry, 5*(4), 371-379.

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.

Tanielian T, Jaycox LH, et al. (2008). Invisible Wounds of War. RAND Center for Military Health Policy Research: Santa Monica, CA.

US Veterans' Study (2008)

Mechanisms of Injury

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

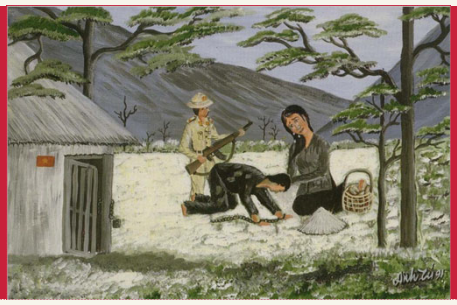
Hoge CW, McGurk D, et al. (2008). Mild traumatic brain injury in US soldiers returning from Iraq. *N Engl J Med*; 358(5): 453-63.

US Veterans' Study (2008)

	Injury with loss of consciousness (n=124)	Injury with altered mental status (n=260)	Other injury (n=435)	No injury (n=1706)
PTSD	44%	27%	16%	9%
Depression	23%	8%	7%	≥ 3%

Hoge CW, McGurk D, et al. (2008). Mild traumatic brain injury in US soldiers returning from Iraq. *N Engl J Med*; 358(5): 453-63.

Vietnamese Ex-Political Detainee Story



Vietnamese Ex-Political Detainee Story

Demographics of Study Participants

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

Mollica, R. F., Chernoff, M. C., Berthold, S. M., Lavelle, J., Lyoo, I. K., & Renshaw, P. (2014). The mental health sequelae of traumatic head injury in South Vietnamese ex-political detainees who survived torture. *Comprehensive psychiatry*, *55*(7), 1626-1638.

Trauma and Torture Histories

Variable	Control (n=82)	Ex-Detainee (n=337)	P-value	Ex-Detainees w/o THI (n=210)	Ex-Detainees w/ THI (n=127)	P-value
Years in Re-education Camps (Mean)	N/A	6.5	N/A	6.6	6.3	.549
# Trauma Events (Median)	1	13	<.001	12	15	<.001
# Torture Events (Median)	0	7	<.001	6	10	<.001
# Events of Torture and Trauma (Median)	1	20	< .0001	17.5	25	< .0001

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The Number and Percent of Vietnamese Ex-Political Detainees Reporting Each Type of Head Injury Across Time

Type of Head Injury	Ex-Political Detainees (N=337)	
	N	%
Explosion	158	46.88
Beaten on head	68	20.18
Shrapnel	58	17.21
Fall for other reason	55	16.32
Suffocation	47	13.95
Fall out of vehicle	40	11.87
Fall from fatigue	36	10.68
Hit head against dashboard	19	5.64
Work accident	15	4.45
Drowning	9	2.67
Whiplash	9	2.67
Shot in head	7	2.08
Strangulation	6	1.78
Other head injury	5	1.48
Hit by vehicle	3	0.89
Hit head while trying to escape from camp	2	0.59

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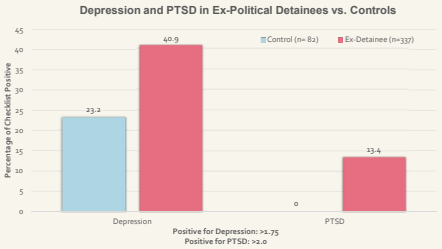
Depression and PTSD in Ex-Political Detainees vs. Controls



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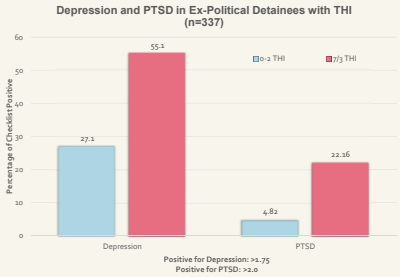
Depression and PTSD in Ex-Political Detainees with THI



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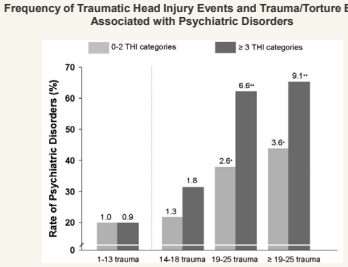
Psychiatric Morbidity in Ex-Political Detainees' Additive Impact of THI



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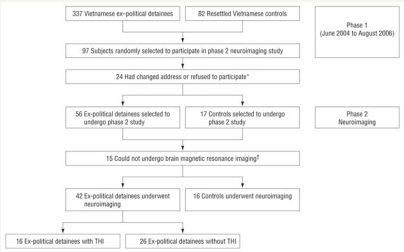
Neuroimaging MRI Study – Vietnamese Study Definition

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 a 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



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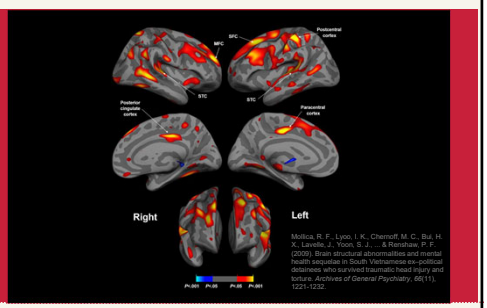
Statistical Thickness Difference Maps Between THI-Exposed Ex-political Detainees and Ex-Political Detainees Who Had Not Experienced THI



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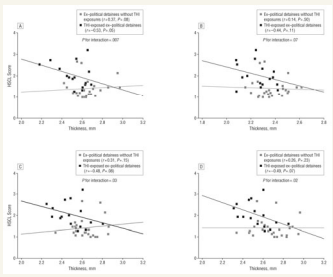
Relationship Between Severity of Depression Measured by the Hopkins Symptom Checklist–25 (HSCL) and Cortical Thickness of Brain Regions that were Related to THI in Each Ex–Political Detainee Group



A. Left superior frontal cortex
B. left middle frontal cortex
C. left superior temporal cortex
D. right superior temporal cortex

Mollica, R. F., Lyoo, I. K., Chernoff, M. C., Bui, H. X., Lavelle, J., Yoon, S. J., ... & Renshaw, P. F. (2009). Brain structural abnormalities and mental health sequelae in South Vietnamese ex–political detainees who survived traumatic head injury and torture. *Archives of General Psychiatry*, *66*(11), 1221-1232.

Summary – Neuroimaging MRI Study

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 1 *Participant characteristics*

	N = 488	%
Region of origin		
West Africa	146	29.9
East Asia	94	19.3
Central Africa	84	17.2
South Asia	57	12.0
Eastern Europe	46	9.4
Americas	18	3.7
Western Europe	18	3.7
Middle East	11	2.3
Africa, other	11	2.3
Other	3	.1
Religion		
Muslim	172	35.2
Christian	165	33.8
Buddhist	116	23.8
Jewish	9	1.8
Other	26	5.3
Torture category		
United States definition	250	51.2
United Nations definition	192	39.3
World Medical Association definition	46	9.4
Proficient in English	185	37.9

Keatley, E., Ashman, T., Im, B., & Rasmussen, A. (2013). Self-reported head injury among refugee survivors of torture. *The Journal of Head Trauma Rehabilitation*, *28*(6), E8-E13.

Prevalence of THI in SOT Programs

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

Total n=488	n=	%
Head injury with loss of consciousness	185	37.9
Head injury without loss of consciousness	150	30.7
No head injury	153	31.3

- "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.

Keatley, E., Ashman, T., Im, B., & Rasmussen, A. (2013). Self-reported head injury among refugee survivors of torture. *The Journal of Head Trauma Rehabilitation*, 28(6), E8-E13.

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.

Source: https://www.americanbrainfoundation.org/domestic-violence-and-traumatic-brain-injury-the-chilling-truth-of-this-hits-home/

Impact of THI/TBI

Source: https://www.cdc.gov/traumaticbraininjury/moderate-severe/index.html

Impact of THI/TBI

Long-term negative effects of TBI are significant.

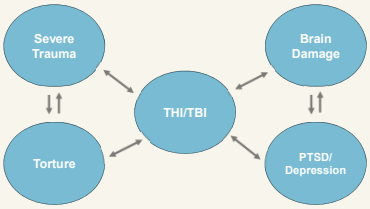
Even after surviving a moderate or severe TBI and receiving inpatient rehabilitation services, a person's life expectancy is 9 years shorter. TBI increases the risk of dying from several causes. Compared to people without TBI, people with TBI are more likely to die from:

Source: https://www.cdc.gov/traumaticbraininjury/moderate-severe/index.html

Conclusion

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.

Conclusion

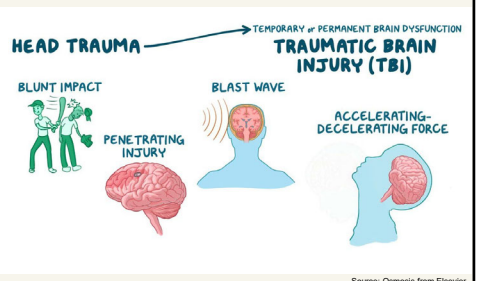


Traumatic Head Injury (THI)/Traumatic Brain Injury (TBI) and severe trauma are highly associated, leading to severe cognitive deficits, mental health disorders, and major physical and social disabilities.

Next Presenter

Altaf Saadi,
MD MSc

Not all head injuries are traumatic brain injuries

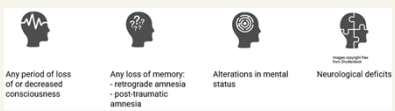


Source: Osmosis from Elsevier

Traumatic Brain Injury

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:



Source: Asylum Medicine Training Initiative Module 8

Not all brain injuries are traumatic brain injuries

Source: MobileODT FemTech Co

TBI Severity

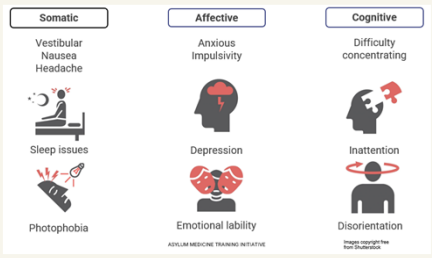
Mild:

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

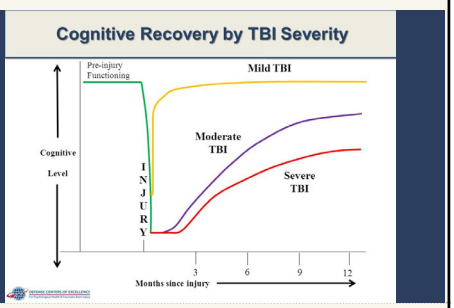
Moderate-severe:

- LOC >30 min
- Post-traumatic amnesia >24 hours

TBI Symptoms

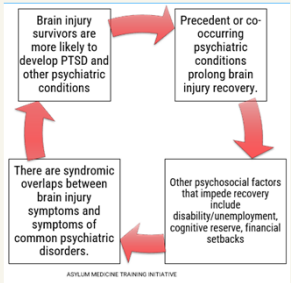


TBI Recovery

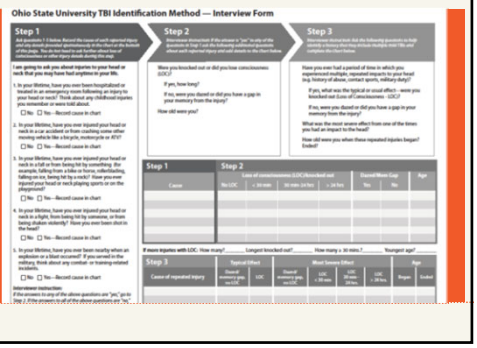


Source: McKenzie-Hartman (2013); traumatic brain injury assessment and care are critical components of the DVBIC model.

TBI and Psychosocial Factors



Ohio State University TBI Identification Method



HELPS Screening Tool

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 #H128AA00022.

Symptom Checklists

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

Source: King, N., Crawford, S., Wenden, F., Moss, N. & Wade, D. (1995). J. Neurology, 242, 587-592.

RIVERMEAD POST-CONCUSSION SYMPTOMS QUESTIONNAIRE (RPQ)

Patient _____ DOI _____ Today's Date _____

After a head injury or accident some people experience symptoms which can cause worry or nuisance. We would like to know if you now suffer any of the symptoms listed below. Compare yourself now with how you were before the accident and circle the number closest to your answer.

0 = Not experienced at all before or after the accident
1 = No more of a problem now than before the accident
2 = A mild problem for me now
3 = A moderate problem for me now
4 = A severe problem for me now

0	1	2	3	4	Headaches
0	1	2	3	4	Dizzy feelings
0	1	2	3	4	Nausea, upset stomach or vomiting
0	1	2	3	4	Noise sensitivity, or easily upset by loud noises
0	1	2	3	4	Sleep disturbance or disruption of sleep patterns
0	1	2	3	4	Fatigue, tiring more easily
0	1	2	3	4	Being irritable, easily annoyed or angered
0	1	2	3	4	Feeling depressed, tearful, crying easily or more emotional
0	1	2	3	4	Getting frustrated easily or being less patient with others
0	1	2	3	4	Poor memory or forgetting things
0	1	2	3	4	Difficulty concentrating
0	1	2	3	4	Taking longer to think
0	1	2	3	4	Blurry vision
0	1	2	3	4	Bright lights irritate or upset me, sensitive to bright lights
0	1	2	3	4	Double vision
0	1	2	3	4	Restlessness, have to move around, can't sit still
0	1	2	3	4	Other _____

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.**

Source: Cognitive assessments in multicultural populations using the Rowland Universal Dementia Assessment Scale: a systematic review and meta-analysis. (2015, March 17). Canadian Medical Association Journal, 187(5), E170. DOI:10.1503/cmaj.140802

Table 1: The Rowland Universal Dementia Assessment Scale

Cognitive domain	Question*	Points
Registration	Given 4 grocery items to register (and recall later)	0
Visuospatial orientation	Left/right orientation with body parts	5
Praxis	Alternating hand movements with fist and palm	2
Visuoconstructional drawing	Copying image of a cube	3
Judgment	Safety precautions when crossing a street	4
Memory recall	Recalling 4 grocery items from above	8
Language	Animal naming in 1 minute	8
	Total score	/30

*Questions have been abridged. The full test and details are available at https://fight dementia.org.au/sites/default/files/20110311_2011RUDASAdminScoringGuide.pdf.

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

Imaging

The overwhelming majority of patients with mild brain injury show no imaging abnormality, either on CT or MRI.

Workflow

History Taking

1. Screening for brain injury
2. Assessing symptoms and functional assessment
3. Assessing psychosocial factors affecting recovery
4. Physical and psychiatric history
5. Obtain collateral, if possible

Examination

1. Observe for behavioral clues even before formal examination
2. Psychological Exam
3. Neurological Exam
4. Physical exam focusing on head and neck

Refer, if needed

1. Neurology
2. Neuropsychology
3. Cognitive Rehab (SLP, OT)
4. Vestibular PT

Disability Exemption for Citizenship N-648

EthnoMed

*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

MGH Center for Immigrant Health

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

- Saadi A, Williams J, Parvez A, Alegría M, Vranceanu AM. Head Trauma in Refugees and Asylum Seekers: A Systematic Review. Neurology. 2023 05 23; 100(21):e2155-e2169. PMID: 37019660; PMCID: PMC10238158.
- Saadi A, Anand P, Kimball SL. Traumatic brain injury and forensic evaluations: Three case studies of U.S. asylum-seekers. J Forensic Leg Med. 2021 Apr:79:102139. doi: 10.1016/j.jflm.2021.102139. Epub 2021 Mar 11. PMID: 33740607 DOI: 10.1016/j.jflm.2021.102139
- Saadi A., Khoury M., Dietiker C., Mass A., Jacquemet N., & Kuhn T. (2022). Module 8: Traumatic Brain Injury. In Emery E., DeFries T. Asylum Medicine Training Initiative: Asylum Medicine Introductory Curriculum. https://asylummedtraining.org/module-8

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

- Eitinger, L. (1961). Pathology of the concentration camp syndrome: Preliminary report. Archives of General Psychiatry, 5(4), 371-379.
- Tanielian T, Jaycox LH, et al. (2008). Invisible Wounds of War. RAND Center for Military Health Policy Research: Santa Monica, CA.
- Hoge CW, McGurk D, et al. (2008). Mild traumatic brain injury in US soldiers returning from Iraq. N Engl J Med; 358(5): 453-63.
- Mollica, R. F., Chernoff, M. C., Berthold, S. M., Lavelle, J., Lyoo, I. K., & Renshaw, P. (2014). The mental health sequelae of traumatic head injury in South Vietnamese ex-political detainees who survived torture. Comprehensive psychiatry, 55(7), 1626-1638.
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- Keatley, E., Ashman, T., Im, B., & Rasmussen, A. (2013). Self-reported head injury among refugee survivors of torture. The Journal of Head Trauma Rehabilitation, 28(6), E8-E13.

Questions?

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:

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Thank you for attending this NCB webinar!

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

February 8th, 2024

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.

More resources are available at www.healtorture.org.

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