

Identification and Management of Posttraumatic Stress Disorder after Traumatic Brain Injury

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@DrCaMcKnight

2019 Barrow Traumatic Brain Injury Symposium



Dignity HealthTM

St. Joseph's Hospital and
Medical Center

Creighton University Arizona Health Education Alliance

So many templates to choose from



Barrow Neurological Institute



Subspecialty Certification
in
Brain Injury Medicine



Millennial generation (1980s – early 2000)

- Poor Work Ethic
- Afraid of Face-to-Face Communication
- Career Impatience
- Frequently Job Hop
- Dependent on Feedback
- Fixated on Flexibility
- Act Entitled
- Love brunch, avocados and memes





Objectives

- Understand risk factors and protective factors related to posttraumatic stress disorder after a traumatic brain injury
- Appreciate differences in symptoms of PTSD for people with TBI compared to people without TBI
- Will highlight pharmacology in some areas but bedrock foundation of treatment is multidisciplinary team assessment and treatment

Traumatic Brain Injury (TBI)

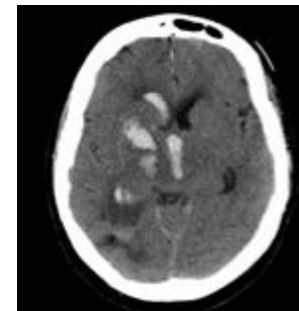
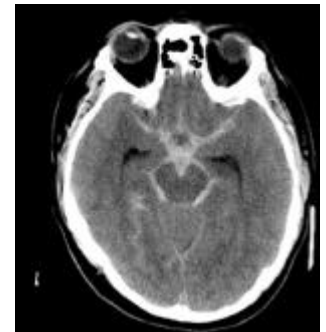
- 51,000 Americans die each year after TBI
- 1.2 million are evaluated in the ED after a TBI
 - Mostly mild TBI
- Disproportionately occurs in males ages under 25 and over 65

Definitions

- TBI
 - Traumatically induced physiological disruption of brain function and/or structure resulting from the application of a biomechanical force to the head, rapid acceleration or blast forces
- Mild TBI = Concussion
 - By definition no abnormality is seen on standard neuroimaging studies
 - Must include 1 of the following:
 - Any period of loss of consciousness
 - Any loss of memory for events immediately before or after the accident
 - Any alteration in mental state at the time of the accident
 - Focal neurological deficit that may or may not be transient

What causes the damage after a TBI

- Macroscopic or gross evidence of pathology
- Fractured skull
- Intracranial Hemorrhage
 - Epidural
 - Subdural
 - Subarachnoid
 - Cerebral (Intra-parenchymal)



What causes the damage after a TBI

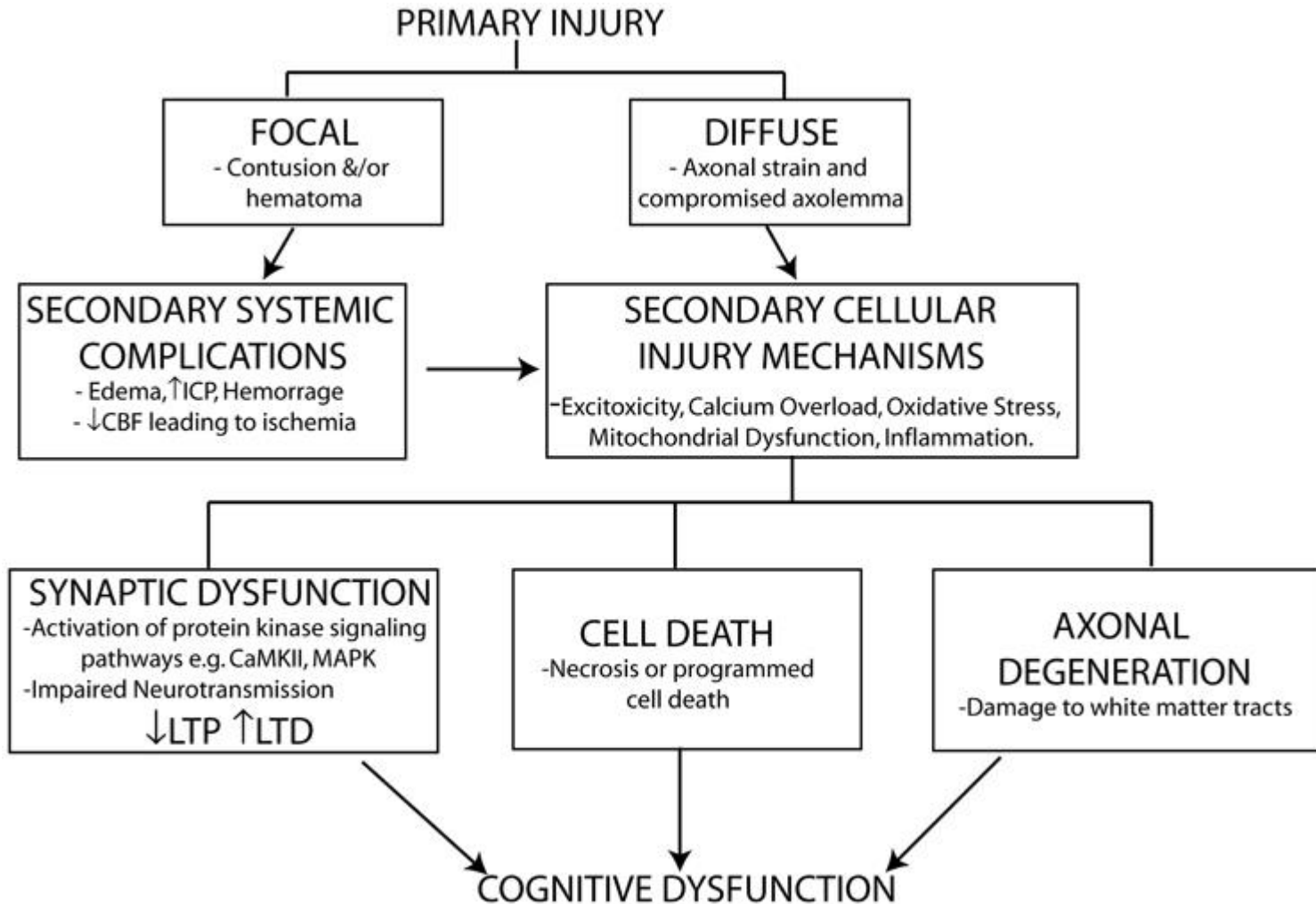
- Microscopic injury
- Rapid depolarization
- Different densities of brain tissue

- Neural damage releases glutamate (and other neurotransmitters), cascade of events

- Leads to further neuron death

- Loss of neuronal circuitry
 - Can be anywhere or any neural circuits

Mechanisms of brain injury



Long term outcomes after TBI

- About 40% of hospitalized TBI survivors developed long term disability
 - Higher rates for more severe TBI
- Estimated 3.2 million Americans currently living with TBI related disability
- High variability, difficult to predict



David Steele ✓

@David_C_Steele

“We just left a rest stop! Why didn't you go then?”

Posttraumatic Stress Disorder



The Deer Hunter

Meryl Streep, Robert De Niro, Christopher Walken



American Sniper

Bradley Cooper, Sienna Miller, Jonathan Groff



Born on the Fourth of July

Tom Cruise, Willem Dafoe, Tom Berenger



Posttraumatic Stress disorder

- As old as war
- Most literature and study relates to war
- Nostalgia, Soldier's Heart, Railway Spine, Shell Shock
- Battle Fatigue, Combat Stress Reaction (CSR), war neurosis
- PTSD first appeared in the DSM III in 1980

DIAGNOSTIC AND STATISTICAL
MANUAL OF
MENTAL DISORDERS

FIFTH EDITION

DSM-5



AMERICAN PSYCHIATRIC ASSOCIATION

Posttraumatic Stress Disorder

- Lifetime prevalence of PTSD is 5% in males and 10% in females
 - Up to 25% or higher after trauma
- Diagnosis
 - Assessment, observation and interview

PTSD Risk Factors

- Greater trauma severity
- Lack of social support
- Elevated life stress

- female gender, lower SES, less education, lower intelligence, previous psychiatric disease, history of abuse, other trauma (not causing PTSD), childhood adversity, family psychiatric history

PTSD Protective factors

- Psychological resilience: adaptive response to high-intensity stressors
- The ability to maintain relatively stable, healthy levels of psychological and physical functioning as well as the capacity for generative experiences and positive emotions even when exposed to trauma
- Positive attitude, optimistic, realistic, emotional self-regulation, confidence, communication and problem solving skills
- Criticisms
 - Victim blaming



Alyssa Limperis
@alyssalimp



me making sure the barista sees me put money in the tip jar

♡ 153K 6:51 AM - Jul 31, 2018

Posttraumatic Stress Disorder (diagnosis)

- Acute emotional responses following trauma are common, expected and temporary
- Exposure to actual or threatened trauma plus all of the following for > 1 month
 - Directly experiencing trauma
 - Witnessing someone else
 - Learning about traumatic events of a loved one
 - Experiencing repeated exposure to aversive details of the traumatic events

Posttraumatic Stress Disorder

- Intrusion symptoms
 - Recurrent intrusive memories
 - Recurrent distressing dreams
 - Dissociative reactions “Flashbacks”
 - Acting out the trauma again
 - Psychological and physiological reactions to triggers

Posttraumatic Stress disorder

- Avoidance of stimuli associated with the trauma
 - Memories, thoughts, feelings
 - People, places, things

Posttraumatic Stress disorder

- Negative cognitions and mood
 - Amnesia for elements of trauma (not from TBI)
 - Exaggerated negative beliefs about oneself
 - I'm a bad person, no one can be trusted, the world is dangerous
 - Distorted cognitions about cause/consequences
 - Self blame, survivors guilt
 - Negative emotional state
 - Disinterest in activities, anhedonia
 - Feeling detached from others

Posttraumatic Stress disorder

- Altered arousal and hyper reactive (flight of flight)
 - Irritable behavior, angry outbursts, aggression
 - Reckless and self-destructive
 - Hypervigilance
 - Exaggerated startle response
 - Can't concentrate
 - Insomnia



My mom checking my homework

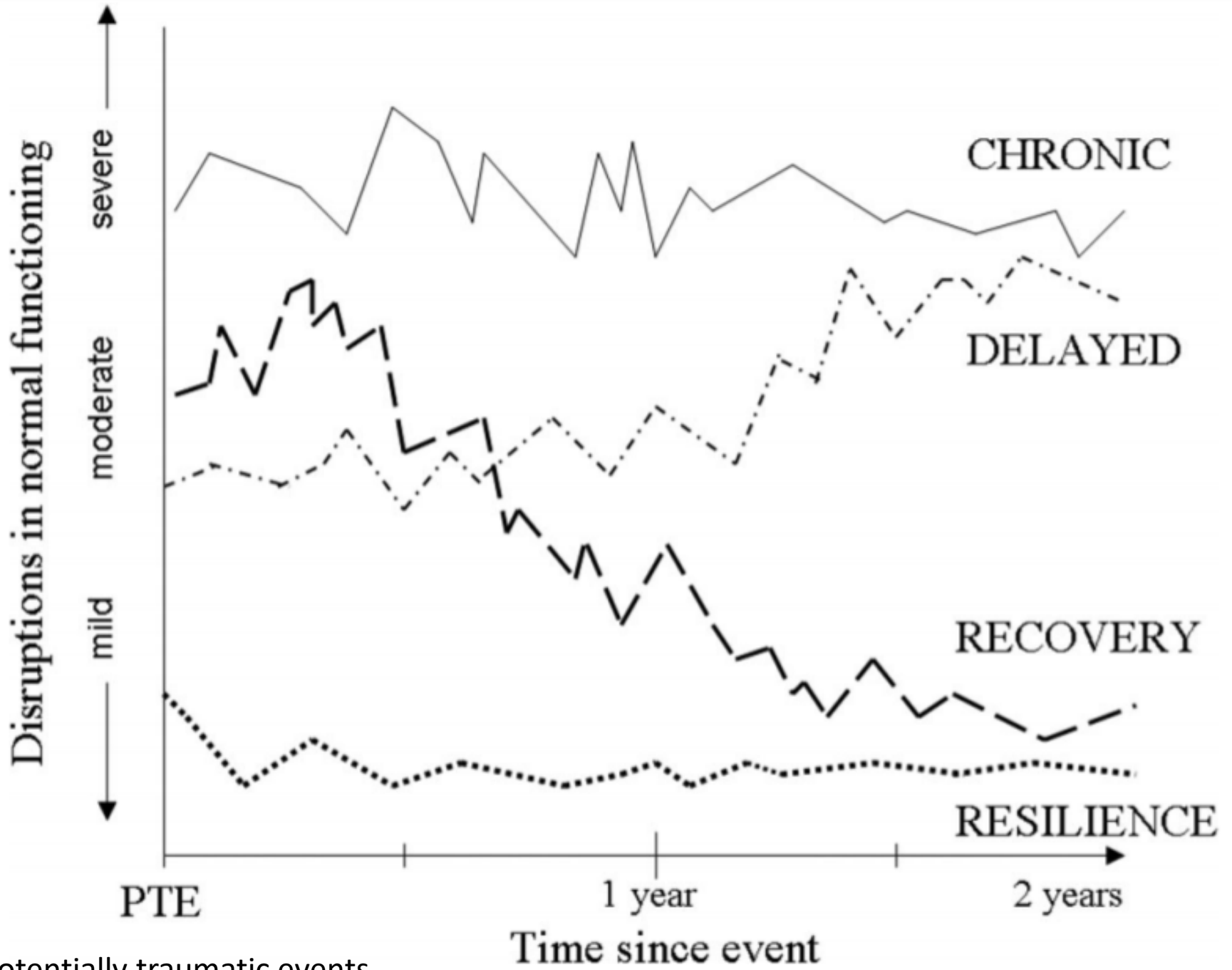
Young Thug
Lil Durk

Trauma and Stress Related disorders

- PTSD related disorders
- Acute Stress Disorder
 - PTSD symptoms < 1 month duration
 - 50% chance to continue beyond 1 month into PTSD
 - Research into how to prevent Acute stress disorder from progressing to PTSD is mixed

Trauma and Stress Related disorders

- Adjustment disorder
 - Emotional or behavioral symptoms that develop in response to an identifiable stressor occurring within 3 months of the stressor
 - Distress is out of proportion to the severity of the stressor
 - Life is disrupted
- Persistent complex bereavement disorder
 - Severe and persistent grief
- Complex PTSD
 - Controversial topic. Childhood abuse leads to affective dysregulation as an adult without altered arousal or intrusion symptoms



potentially traumatic events

me after I put the fitted sheet on my bed
by myself



Prevention of Posttraumatic Stress Disorder (PTSD)

- After TBI and before development of PTSD there is a window to for prevention
- Psychological interventions
 - In the immediate aftermath focus typically needed on safe environment
 - Most common intervention is Psychological Debriefing
 - Other approaches are coping skills therapy, stress inoculation therapy, psychoeducation, normalization, reassurance

Prevention of Posttraumatic Stress Disorder (PTSD)

- Alcohol
 - Interferes with memory and pain
- Morphine
 - If given right after injury decreases rate of PTSD
- Propranolol
 - Reduce the ‘fight or flight’ response
- Gabapentin
 - No better than placebo
- Hydrocortisone
 - Mostly animal studies. Can help regulate Hypothalamic–Pituitary–Adrenal Axis, Limbic System, and Cortisol

hits blunt

DUDE, WHAT IF...WHAT IF WE LAUNCHED MY CAR INTO SPACE?



PTSD and TBI

- The origin of PTSD and TBI may overlap
 - So can their symptoms
- TBI consequences generally separated into:
 - Cognitive
 - Amnesia
 - Emotional
 - Irritability, dysphoria, anxiety
 - Somatic
 - Spasticity, dysautonomia

PTSD and TBI

- Since core symptom of PTSD is re-experiencing and a common feature of TBI is amnesia, in some cases they 'cancel out'
- Rates of PTSD after MVC studied were similar for those with and without a TBI
- In cases of PTSD and TBI the two generally worsen each other
- They can also both happen at two different points in time

PTSD and TBI

- TBI may alter the response to standard pharmacological treatments for PTSD
 - TBI may alter neurotransmitter levels
 - Loss of neurons in important pathways
- Primary feature of psychotherapy for PTSD is exposure and desensitization

PTSD and TBI

- Pharmacologic treatment
- Similar to those without TBI
- Antidepressants
- Adrenergics
 - Beta blocker (propranolol) and alpha antagonists (prazosin)
- Antipsychotics
- Benzodiazepines again recommended short term only

PTSD Pharmacological Treatment - Antidepressants

- SSRI's
- Sertraline (Zoloft)
- Paroxetine (Paxil)
 - Fluoxetine (Prozac)
 - Escitalopram (Lexapro)
 - Fluvoxamine (Luvox)
 - Citalopram (Celexa)

PTSD Pharmacological Treatment – Adrenergics

- Propranolol
 - β -blocker
 - blocks the beta receptor site for catecholamines epinephrine (adrenaline) and norepinephrine
- Prazosin
 - α -1 antagonist
 - Blocks the alpha-1-adrenergic receptor in vascular smooth muscle, the central nervous system, and other tissues
- Clonidine, Guanfacine
 - α -2 agonist
 - stimulating α 2 receptors in the brain causes reflex inhibition of downstream neurons

PTSD Pharmacological Treatment - Antipsychotics

- Quetiapine
- olanzapine
- Risperidone
- aripiprazole
- Ziprasidone
- Lurasidone
- Others

PTSD Pharmacological Treatment – Benzodiazepines

- Often used but the research suggests they shouldn't be
- Side effects are considered benign
- They can work short term (reinforces prescribing practices)
 - lorazepam (Ativan)
 - alprazolam (Xanax)
 - clonazepam (Klonopin)
 - chlordiazepoxide (Librium)
 - diazepam (Valium)



**YOU HAVE
QUESTIONS**



I HAVE ANSWERS

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