Working with distressed mood post mTBI

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Subset of concussion patients described herein

- > 90%+ from MVAs, rarely sports injuries
- ➤ moderate TBI more frequent? ¹
- ➢ often long-term impacts on emotional functioning ²
 Dikmen et al. (N=210): Global Severity Index moderately elevated emotional distress 3-5 yrs post, regardless of Glasgow scores
- also impairments in many areas of functioning at 3-5 yrs (next slide)²
- chronic pain highly prevalent long-term even in mild TBI! 1 yr post: 93% ³, 2 yrs 95% ⁴
- I'm in Mary Heinricher camp: ↑ photosensitivity,
 ↓ pain thresholds, etc suggest persistent post-concussion syndrome is a chronic central sensitization disorder, similar to chronic pain 5
- > as such, long-term mental health care appropriate for many

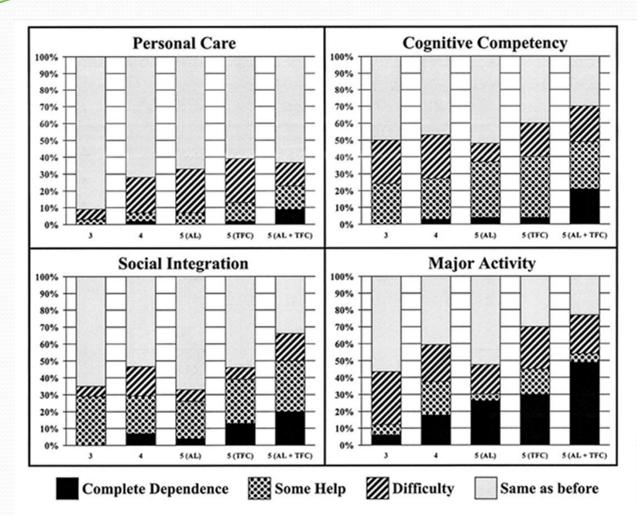
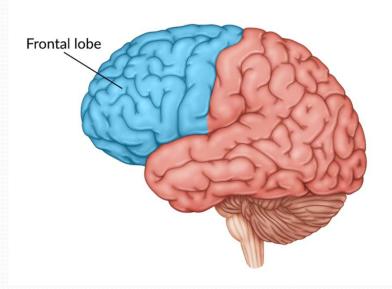


Fig 2. Functional status as a function of modified AIS-Head score. Group 5 is subdivided on the basis of anatomic lesion (AL) alone, TFC alone, or both anatomic lesion and TFC.

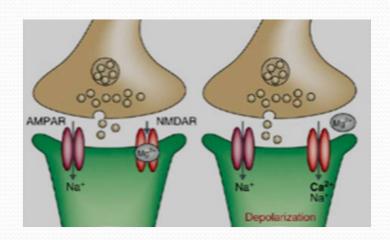
PCS = highly complex syndrome



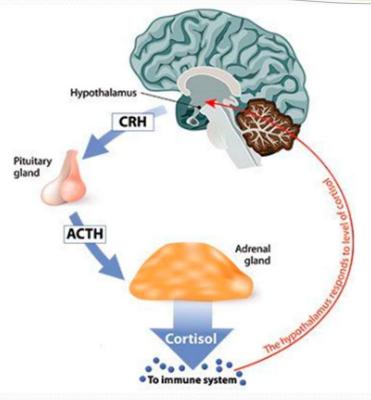
- damage to frontal areas characteristic of mild TBI impairs abilities to regulate cognition, emotion, and behavior ⁶
- ➤ all 3 interactive cognitive & behavior problems affect emotions, emotional problems affect cognition and behavior



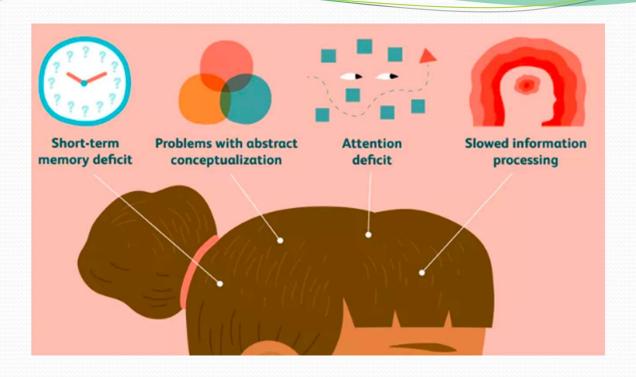
 disruptive emotional patterns include affective lability, irritability, pathologic crying, disinhibition, aggression



 physiological mechanisms include protein aggregation, inflammation, metabolic disruption, altered synaptic plasticity & neurotransmitter signaling ¹



 intricate actions of stress hormones on diverse brain functions leads to chronically elevated hormone levels that reduce neurogenesis, resulting in dendritic atrophy & impaired cognition ⁸



 cognitive impairments are associated with worse health-related QOL, which aggravate the effects of depressive symptoms on emotional functioning ⁹





 chronic pain exacerbates emotional aspects of PCS ¹⁰, and complex pharmacological treatments further complicate ⁷

comorbid depression & PTSD

- > comorbid depression ~ 30% in 1st yr 11
- ➤ associated with reduced gray matter in rostral anterior cingulate cortex, pre-frontal cortex, hippocampus, and damage in white matter tracts (cingulum, internal capsule, superior longitudinal fasciculi, and anterior and posterior corona radiata) 12
- comorbid PTSD estimates vary greatly, one review: 20-40%





Treatment for emotional distress in mild TBI

- CBT most widely used and recommended, standard approach includes:
 - psycheducation about mild TBI including sleep hygiene, screen time limits, audiobooks
 - brain breaks, relaxation techniques (diaphragmatic breathing, body scan meditation techniques)
 - cognitive restructuring of maladaptive beliefs (especially relevant to depression-related negativity bias)
 - re-engagement enjoyable and valued activities
 - tailored pacing of activities
 - addressing communication issues with family and friends
 - resuming work when possible

Mindfulness training often incorporated in CBT

Skill of paying attention
to present-moment experience –
sensations, thoughts, feelings, circumstances on a moment-to-moment basis
in a non-judgmental way



Mindfulness changes brain structures

recent studies 13-18 (mostly in healthy subjects):

- anterior cingulate cortex
- posterior cingulate cortex
- left hippocampus
- insula
- pons
- amygdala
- temporo-parietal junction
- fronto-limbic network
- default mode network structures



Mindfulness changes brain structures

these changes imply improvements in:

- emotion regulation (especially capacity to calm fear)
- attention regulation
- body awareness
- learning, cognition, memory
- perspective taking, empathy and compassion



treatment of comorbid PTSD

- > PTSD hinders recovery from TBI 6
- one small RCT of CBT vs supportive counseling for comorbid TBI/PTSD 19
- exposure strategies used: psychoeducation about nature of PTSD, imaginal exposure to reexperiencing symptoms, graded in vivo exposure to fear-provoking situations
- ➤ CBT: less PTSD at posttreatment (8% vs 58%), 6-months (17% vs 58%)
- across the board, various forms of exposure therapy, including EMDR, more effective for PTSD than non-trauma focused psychotherapies

TBI-related impairments in emotion recognition

- multiple studies report impairments in emotion recognition that negatively affect social communication and the maintenance of interpersonal relationships
- > shown across various modalities of emotional expression (e.g., face, voice, emoji, multi-modal)
- "Emotion Lab" component of Mindful Yoga program eliciting then exploring with curiosity somatic sensations of various emotions – Joy, Anger, Compassion, Sorrow, Fear, Love

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