

Psychological Effects: A Common Co-morbidity in Concussion

Angelina Rodner, PhD

*Clinical Psychologist & Clinical Assistant Professor
Department Of Physical Medicine & Rehabilitation
SUNY Upstate Medical University
Upstate Concussion Center*

August 13, 2019

What is a concussion?

- Mild traumatic brain injury (mTBI)
- A disruption in normal brain function due to a blow or jolt to the head
- CT or MRI is almost always normal
- Invisible injury



THE CONSEQUENCES OF CONCUSSION/mTBI

- Can result in adverse symptoms
 - **Physical**
 - **Behavioral/emotional**
 - **Cognitive**
- Can impact an individual's activities of daily living and participation in life roles.
- Early diagnosis and management of Concussion/mTBI will improve a patient's outcome and reduce the impact of persistent symptoms

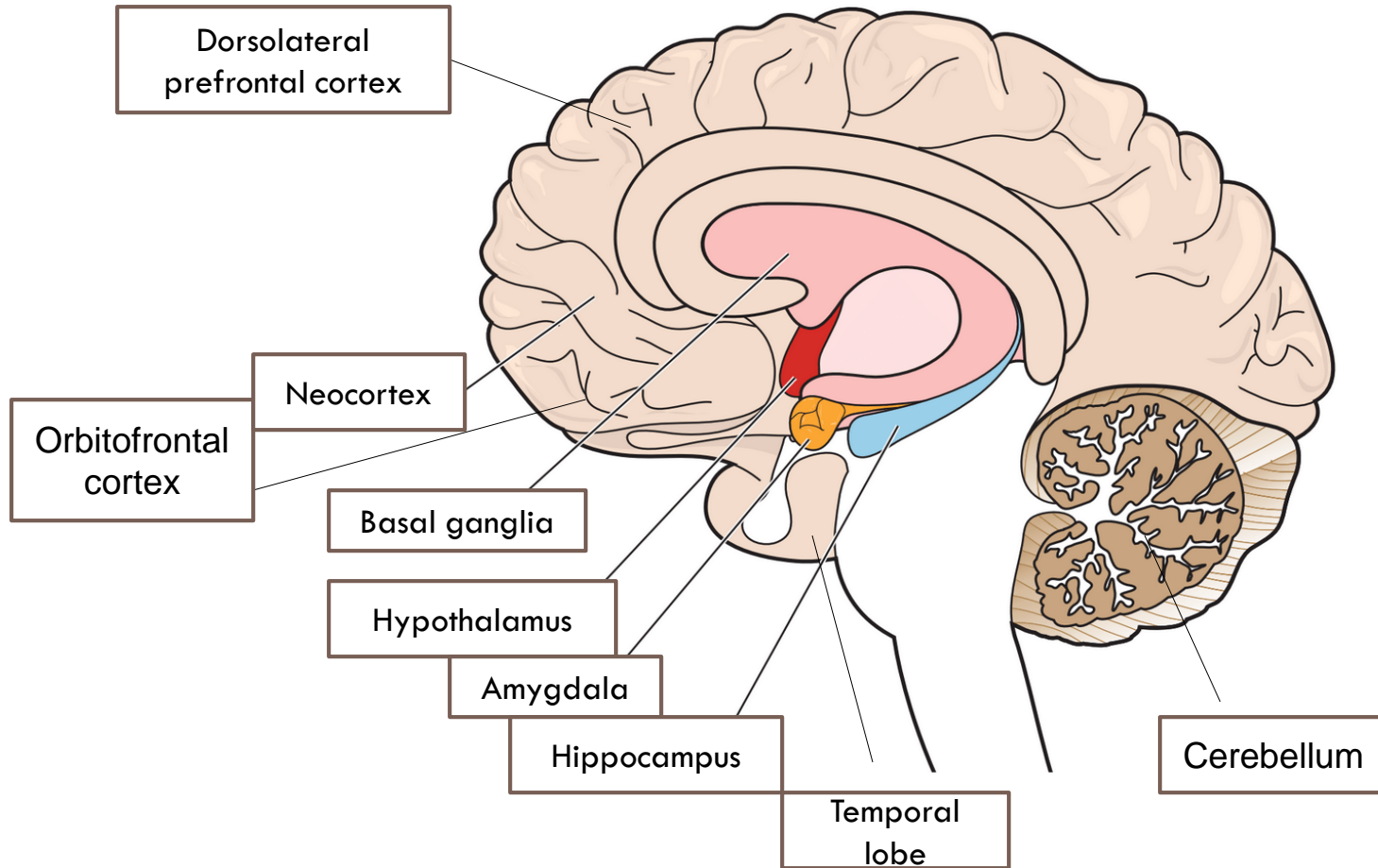
PERSISTENT POST CONCUSSION SYMPTOMS

- Many patients with mTBI report concussive symptoms that resolve within weeks to months
 - Cognitive
 - Memory problems, cognitive deficits
 - Poor concentration and attention
 - Slower processing
 - Somatic
 - Headache, nausea, dizziness, vision changes
 - Emotional –
 - Depression, anxiety, irritability
 - Change in motivation; poor tolerance of activities

PERSISTENT POST CONCUSSION SYMPTOMS

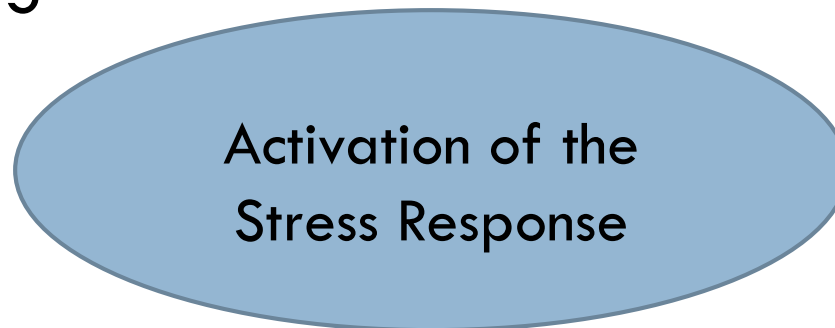
- Large subset of patients may experience these symptoms for six months to one year or even longer post injury
- Literature shows strong correlation with*:
 - Female sex
 - History of mental health diagnosis
 - Type of injury – MVA; assault
 - Experiencing high PCS – 2 weeks post injury
 - Diagnosis of other orthopedic injuries

NEUROPSYCHOLOGICAL BASIS OF TRAUMA

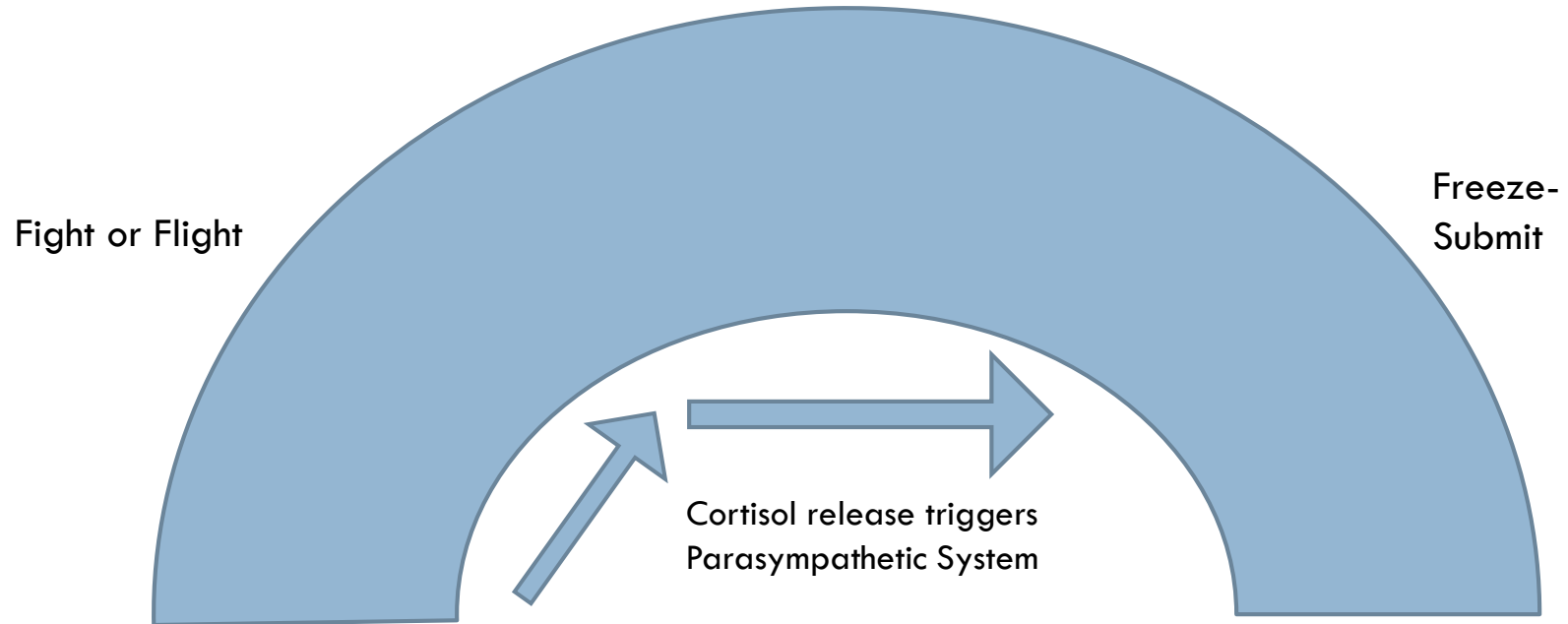


HOW THE BRAIN RESPONDS TO A THREAT

- Amygdala – the alarm sounds and activates the emotional memory center
- Limbic system – (a set of structures in the brain that deal with emotions and memory) perceives and reacts to the threat
- Frontal Cortex – Shuts down to facilitate instinctive responding



THE STRESS RESPONSE



Activation of the Sympathetic

Nervous System: noradrenaline release, increased heart rate and respiration, rush of energy to muscle tissue, suppression of non essential systems, frontal lobe inhibition

Activation of the Parasympathetic Nervous

System: decrease autonomic activation, shaking and trembling, exhaustion, depletion, shutting down, numbing

DIAGNOSTIC APPROACH

- Use of standardized measures
 - Concussion
 - The Rivermead Post-Concussion Symptoms Questionnaire – (RPQ)
 - Anxiety & Depression
 - Hospital Anxiety and Depression Scale (HADS)
 - PTSD
 - Impact of Events Scale – Revised (IES-R)
 - Cognitive screen
 - Mini Mental State Examination or Montreal Cognitive Assessment (MOCA)

TAKING A GOOD HISTORY

- **Nature of injury**
 - Accident, MVA, Fall
 - No-fault/Workman's compensation
- **Type of injuries**
 - Neck, other orthopedic injuries
 - Emotional changes
- **Medical history/psychiatric history**
- **Symptom presentation**
 - Heightened reporting of symptoms can lead to persistent PCS
- **Style of coping prior to the injury**
 - Active vs. passive
- **Length of time since injury**

SYMPTOM PRESENTATION OF CONCUSSION PATIENTS

TYPICAL

- Headache
- Dizziness
- Vision changes
- Light & noise sensitivity
- Cognitive processing changes
- Fatigue/ sleep changes
- Irritability – over injury
- Decrease in social engagement

ATYPICAL

- **Headache** – intensity is severe & limits majority of functioning
- **Vision changes** – avoiding any visual stimulation/ wears sunglasses all of the time
- **Sensory sensitivity** – unable to tolerate light, noise and avoiding situations
- **Sleep changes** – sleeping more than 12 hours per day and napping (indicative for depressive symptoms) or unable to sleep; nightmares & ruminating thoughts
- **Anxiety symptoms** – either exacerbated or new since injury; fears related to social engagement; talking or thinking about injury
- **Speech difficulty** – stuttering
- **Loss of body function** - unexplained

MULTIDISCIPLINARY TREATMENT APPROACH OF TYPICAL SYMPTOMS

- **Medical management (MDs, Dos, NPs, PAs)** – medical assessment, medication management
- **Rehabilitation Psychology – (Psychologists)** – provide CBT interventions post injury; normalize the reaction
- **Neuropsychology (Neuropsychologists)** – provide cognitive testing to assess deficits post injury
- **Physical Therapy (PT)** – exertion, dizziness, headache, neck symptoms
- **Occupational Therapy (OT)** – assess cognitive and vision struggles
- **Speech Therapy (SLP)** – Cognitive retraining
- **Referral to:**
 - Optometry, Neurology, Orthopedics,
 - Pain Management, ENT, Pulmonology

TREATMENT ACCOMMODATIONS FOR PATIENTS with:

■ ATYPICAL SYMPTOMS

- They will have a smaller window of tolerance
- May need to prioritize treatment based on symptom intensity & presentation
 1. Medical – medications for headaches & emotional symptoms
 2. Psychology – education; create a plan for gradual return to baseline functioning; consider formal counseling
 3. PT – getting the patient up; movement (can help both physical and emotional symptoms)
 4. Vision assessment & OT – identify visual struggles; distinguish between premorbid symptoms versus changes from the injury
 5. Consider referral to other specialty services

REFERENCES

- **Bremner, J.D., Elzinga, B, Schmahl, C, and Vermetten, E. (2008). Structural and functional plasticity of the human brain in posttraumatic stress disorder. *Prog Brain Res, 167: (171-186).***
- **Cnossen, M.C., van der Naalt, J., Spikman, J.M., Nieboer, D, Yue, J.K., Winkler, E.A., Manley, G.T., von Steinbuechel, N., Polinder, S., Steyerberg, E.W., & Lingsma, H.F. (2018). Prediction of Persistent Post Concussion Symptoms After Mild Traumatic Brain Injury, *Journal of Neurotrauma, 35: (2691-2698).***
- ***Healing the Fragmented Selves of Trauma Survivors: Overcoming Internal Self-Alienation* by Janina Fisher. Routledge, 2017.**
- **Leddy, J.L., Sandhu, H, Sodhi, V, Baker, J.G and Willer, B (2012) Rehabilitation of Concussion and Post Concussion Syndrome. *Orthopaedic Surgery, 4:2, (147-153).***
- **Stein, M.B. & McAllister, T.W. (2009). Exploring the convergence of Posttraumatic Stress Disorder and Mild Traumatic Brain Injury, *American Journal of Psychiatry, 166:7, (768-776).***