Brain Injury and Mental Illness: A Dangerous Intersection

Tom Boyd, PhD
Neuropsychologist
Sacred Heart Medical Center
Eugene, Oregon

How Brain Injury and Mental Illness Overlap

Symptom Overlap: TBI Disrupts Thought Processes

- Attention problems (concentration, tracking, filtering)
- Memory impairment
- Conceptual disorganization
- Altered causal or logical reasoning
- Executive dysfunction (e.g., planning, organizing, prioritizing, staying on-task

Symptom Overlap: TBI Can Lead to Personality and Affective Changes

- Mood changes, including depression, anger, mania, or decreased control of emotions/behavior
- Affective blunting or lability
- Paranoia, hallucinations
- Unusual beliefs or delusions (including misidentification syndromes)

Misidentification and Duplication Syndromes

- Typically viewed as neurological in origin
- Reduplicative paramnesia (illusion that one's location is identical to another elsewhere)
- Capgras syndrome (loved ones as imposters)
- Fregoli syndrome (separate people viewed as same person in disguise)
- Cotard syndrome (belief that one is dead)

Characteristic Symptoms of Schizophrenia (from DSM-IV)

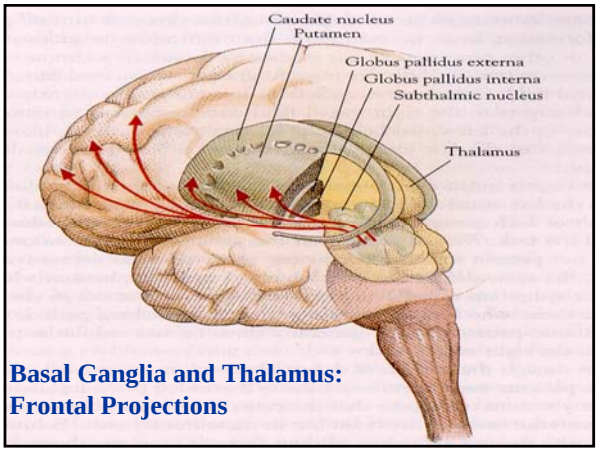
- Altered attention and perception
- Language and communication difficulty
- Reasoning
- Impaired behavioral monitoring
- Altered emotion, incapacity for pleasure
- Decreased drive and intention

Psychosis and TBI: What's the Brain 'Connection'?

- Frontal, temporal, and subcortical structures widely interconnected (McAllister & Ferrell, 2002).
- Widespread disconnection through Diffuse Axonal Injury (DAI) common after moderate to severe TBI.
- Decreased connectivity between cortical areas in schizophrenia (Frith, 1996).

Neural Overlap in Psychosis

Brain Structure	Psychosis after TBI	"Neurological" Psychosis	"Psychiatric" Psychosis
Dorsolateral Prefrontal	Yes	Yes	Yes
Orbitofrontal	Yes	Yes	
Temporal Lobe/ Hippocampus	Yes	Yes	Yes
Temporolimbic	Yes	Yes	Yes
Subcortical White Matter	Yes	Yes	
Basal G./Thalamus		Yes	Yes
Brainstem		Yes	



Basal Ganglia and Thalamus: Frontal Projections

TBI Increases Vulnerability to Psychiatric Illness

- **A study following TBI survivors for 30 years noted increased incidence of depression, delusional disorder, and personality disorder (Koponen et al., 2002).**
- **Observed incidence of schizophrenia-like psychosis after TBI ranges from 0.7% to 9.8%, two to three times the incidence in the general population (McAllister and Ferrell, 2002).**

Davison and Bagley (1969): Risk Factors for Post-TBI Psychosis

- Left hemisphere and temporal lobe lesions.
- Closed head injury.
- Increased severity of injury with more diffuse axonal injury (DAI).
- Duration of coma > 24 hours.
- Possible propensity to mania after right frontotemporal and right or bilateral basal ganglia injury.
- Mania may also be associated with epileptiform abnormalities.

Psychiatric Problems Increase Risk of Brain Injury

- Vassalo et al. (2007) studied psychiatric risk factors for ABI in a sample of 3766 non-referred community dwelling US veterans.
- Depressed persons were at 2 ½ times greater risk of brain injury.
- Persons with anxiety and conduct disorders were at 60% greater risk of TBI.

Risk Factors for TBI and Genetic Risk for Schizophrenia Interact

- Malaspina et al. (2001) observed greater incidence of TBI in undiagnosed family members of schizophrenics than of bipolar individuals.
- In these families, TBI was associated with greater risk of subsequent schizophrenia.

Violence, Abuse and Neglect after TBI (Reichard et al, 2007)

- If this small (N=9) qualitative study is accurate, this is a significant problem
- BI survivors vulnerable to violence and neglect for number of reasons
- Reports of abuse by persons with brain injury often discounted
- Participants suggested strategies for prevention: support systems, anger management skills, prevention of drug and alcohol abuse, public education regarding TBI.

Big Problem, Broad Impact

- **Increased Medicaid expenditures for persons with both BI and mental illness (Wei et al. 2005).**
- **More than 40% of homeless hospital admissions with schizophrenia-like symptoms had history of TBI (Silver & McKinnon, 1993).**
- **Of 15 death row inmates , all had history of severe brain injury and 9 had recurrent psychoses preceding incarceration (Lewis et al. 1986).**

Treatment Models and Approaches

Treatment Models

- Brain Injury: Rehabilitation through skills rebuilding and compensatory strategies
- Crisis (Band-aid)
- Mental Illness: Habilitation, skills building
- Alliance (It takes a village…) (100% Access)
- These models are not mutually exclusive

Treatment Strategies

- Physical crisis management skills needed for safety of clients and staff.
- Clubhouses, support groups and Uhlhorn.
- Challenging-client case conference: mine the expertise within and across agencies.
- Support the natural supports.
- An ounce of follow-up is worth a pound of crisis intervention. Sooner or later, the buck stops at the front door.
- Psychiatric consultation is a key component.

Importance of Psychiatric Consultation

- Understanding of brain injury critical.
- Diagnosis and determination of cause guides medical treatment.
- Potential causes:
  - *Posttraumatic seizure.*
  - *Mood disorder (depression or mania).*
  - *Ongoing or past substance abuse.*
  - *Schizophrenia-like disorder.*
- Medication management most effective in context of psychotherapeutic support and monitoring.
- Role of "atypical" antipsychotic medications

What Is Needed?

- We need specialists with skills in several areas: TBI, mental illness, substance abuse.
- It takes a village: structure, supports and ongoing follow-up.
- A village with resources does a better job than one without.
  - Political advocacy as part of the process.
  - A coalition of brain injury, substance abuse, and mental health advocates speaking in one voice.