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Dual Diagnosis: Traumatic Brain Injury with Spinal Cord Injury

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DISCLOSURE

Monifa Brooks has no financial conflicts of interest relevant to this activity.

LEARNING OBJECTIVES

At the conclusion of this presentation, the learner will:

Identify incidence of dual diagnosis

Explain diagnosis of dual diagnosis

Discuss medical management of persons with dual diagnosis

Identify rehabilitation processes unique to dual diagnosis

Identify rehabilitation outcomes in those with dual diagnosis

Incidence of Dual Diagnosis

- Incidence reported between 24-74%
- ****Increased with high tetraplegia****
- ****Increased with ventilator dependency****
- ****Increased with high velocity impact mechanism of injury****
- ****Mild TBI is most common form of accompanying injury****
- True incidence may be under-reported

Diagnosis

- Historical factors
 - Loss of consciousness (LOC)
 - Mechanism of injury
 - Initial glasgow coma scale (GCS) score
 - Presence of post-traumatic amnesia (measured by GOAT)
 - Agitation
 - Seizures
 - Substance abuse
 - Respiratory insufficiency

Glascow Coma Scale (GCS)

Eye Opening:

spontaneously	4
to verbal command	3
to pain	2
none	1

Verbal:

oriented	5
disoriented	4
inappropriate words	3
incomprehensible	2
no response	1

Motor:

obeys commands	6
localizes to pain	5
flexion withdrawal	4
abnormal flexion	3
abnormal extension	2
no response	1

Injury Classification

Mild ----- 13-15

Moderate ----- 9-12

Severe ----- <=8

Diagnosis

- Neuro-imaging
 - CT scan can be performed quickly and is generally readily available, but decreased sensitivity
 - MRI has improved sensitivity, but requires more time and may be contraindicated in some
 - **Absence of imaging abnormalities does NOT exclude TBI**
- Neuropsychological testing
 - Helpful in identifying more subtle deficits, can also be used to track progress

Diagnosis

- All patients should be screened for TBI
- Clinical signs of TBI may include:
 - Decreased arousal
 - Impaired concentration
 - Memory impairment
 - Agitation or aggressive behavior
 - Emotional lability

Classification

- Macciocci Classification of TBI in SCI
 - Mild uncomplicated: GCS 13-15 + clinical evidence of brain dysfunction, w/without LOC
 - Mild complicated: GCS 13-15 with above + cerebral pathology
 - Moderate: GCS 9-12 w/without cerebral pathology
 - Severe: GCS 3-8 w/without cerebral pathology

Medical Management

- Dysautonomia
 - Fever
 - Sweating
 - Tachycardia
 - Tachypnea
 - Rigidity
 - Increased incidence with severe TBI
 - Increased incidence with diffuse axonal injury

Medical Management

- Dysautonomia treatment options
 - Beta-blockers
 - Diltiazem
 - Gabapentin
 - Bromocriptine
 - Benzodiazepines
 - Morphine
 - **May require multiple medications**

Medical Management

- Sleep disturbance/Fatigue
 - Poor sleep is common following TBI
 - Improving daytime wakefulness and minimizing napping can be helpful
 - Dopaminergic medications may decrease fatigue
- Hyponatremia
 - SIADH-low FENa, treat with fluid restriction
 - Cerebral salt wasting-high FENa, treat with hydration and salt tabs

Medical Management

- Seizure disorder
 - Prophylaxis generally recommended for 1 week
 - Anti-epileptics with minimal negative cognitive side effects are preferred
 - Consider extension of prophylaxis in presence of:
 - Early seizures
 - Depressed skull fracture
 - Penetrating trauma
 - Intracerebral hemorrhage

Medical Management

- Spasticity
 - Centrally acting meds may impair new learning
 - Peripherally acting meds may decrease strength in partially innervated muscles
 - Focal spasticity can be treated with chemodenerivation
 - Intrathecal delivery of medication(s) can decrease cognitive impact

Rehabilitation

- Requires intensive new learning to master skills and adapt to new lifestyle
- BI: retraining previously mastered skills (*re-learning*)
 - Task simplification and repetition
- SCI:
 - New skills to perform tasks
- SCI/TBI– the prognosis, recovery, treatment, and rehabilitation become more complicated
 - Cognitive/behavioral issues may be the primary focus until the patient can retain new info.

Rehabilitation

- Placement depends upon primary condition
- SCI without any evidence of TBI- SCI unit
- SCI with mild-moderate TBI- TBI or SCI unit
- SCI with severe TBI- TBI unit

- **Requires cross-training of all staff

Rehabilitation

- Treatment team may include:
 - Nursing
 - Physician(s)
 - Psychologist/Neuropsychologist
 - PT/OT/SLP/RT
 - Pharmacist
 - Nutrition
 - Case management/social work

Rehabilitation

- Traditional approach to SCI rehab focuses on learning new techniques to accomplish functional tasks
- New learning and memory are impaired in persons with TBI
- Behavioral concerns often require alteration of traditional treatment plan
- Flexibility is essential

Rehabilitation

- Modifications to therapy
 - Minimize external stimuli
 - Allow for frequent rest breaks
 - Plan more demanding tasks early in treatment session
 - Focus on modeling/repetition rather than verbal instruction
 - May require more functional activities

Rehabilitation

- Early involvement of caregivers to reinforce learning
- Use of external cues (memory book, alarms for weight shifts/IC's, etc)
- Consistent instruction/education from all staff
- Keep instructions simple

Rehabilitation-Outcomes

- Variable reports on length of stay and functional outcomes
 - May have decreased FIM change as compared to SCI patients
- Increased rehabilitation costs
- Decreased discharge to community rates
- Increased incidence of family and personal adjustment issues

Summary

- Dual diagnosis is common
- Early screening is key to early intervention
- Inter-disciplinary team approach is key to maximizing functional outcomes

THANK YOU!

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