Subacute Rehabilitation Following An Hypoxic Ischemic Brain Injury Resulting In Severe Ataxia: A Case Report
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Background/Purpose
- Hypoxic/anoxic brain injuries result from global lack of oxygen to the brain from events such as drowning, choking, and cardiac or respiratory arrest.1
- Certain areas of the brain have more devastating effects when deprived of oxygen as they have a higher metabolic activity and increased utilization of oxygen. One area in particular is the basal ganglia.2
- Anoxic brain injuries involving infarcts of the basal ganglia (containing globus pallidus) can result in involuntary movement disorders such as:
  - Myoclonic jerks
  - Ataxia
  - Alldynic-rigid movements
  - Difficulties in learning new motor skills2
- Ataxic gait is characterized by:
  - Difficulties with inter- and intra-limb coordination
  - Decreased speed of ambulation
  - Irregular stepping pattern
  - Impaired postural stability
  - An increased risk of falls3
- The purpose of this case report is to provide physical therapy interventions that were utilized in an inpatient rehabilitation hospital setting for a patient who experienced a hypoxic brain injury.

Patient History
- Patient past medical history includes:
  - TBI (2009)
  - Unspecified neurodegenerative disorder
  - Epilepsy
  - Abdominal and lower extremity thrombosis
  - Factor V Leiden gene mutation
- 28-year-old male was independent with activities of daily living (ADLs) while living at a neurorehabilitative assisted-living facility when he experienced a witnessed choking episode leading to respiratory and cardiac arrest.
- Admitted into the intensive care unit (ICU) and intubated. Hypothermia protocol was initiated due to his poor rating on the Glasgow Coma Scale (GCS).
- Magnetic Resonance Imaging (MRI) was performed demonstrating bilateral acute globus pallidus infarcts consistent with an hypoxic ischemic brain injury.
- Once medically stable, he was transferred to a subacute rehabilitation hospital to improve functional mobility deficits due to myoclonic tremors and severe ataxia.

Timeline of Events

| April 2018 | Admitted into acute care hospital within the ICU
| April 2018 - May 2018 | Therapeutic hypothermia protocol was initiated due to poor rating on the GCS
| May 26, 2018 | MRI was taken demonstrating bilateral acute globus pallidus infarcts consistent with an hypoxic ischemic brain injury

Patient Goals
- Bed Mobility: Supine to sit with minimal assistance from the physical therapist.
- Transfers: Sit to sit transfer with maximal assistance from the physical therapist.
- Ambulation: Ambulate on level surfaces for a distance of 10 feet using parallel bars with maximal assistance from the physical therapist.
- Balance: Maintain a position of unsupported long sit while performing dynamic sitting balance tasks with minimal assistance from the physical therapist.

Interventions
- Gait Training (with music): Max A of 2+ WC follow (~500 ft)
- Ambulation with walker and 1-person hand held assistance

Discussion/Outcome
- Improvements in functional mobility including bed mobility, transitional movements, performing transfers, and gait were noted throughout the first 20 days of therapy; the last few days of treatment were increasingly difficult due to significant fluctuations in his medical status.
- The patient was sent to an acute care hospital to receive a percutaneous endoscopic gastrostomy (PEG) tube.
- Unfortunately, the patient experienced unforeseen complications at the acute care hospital which ultimately resulted in his passing.

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REFERENCES

Met Goals
- Improvements in functional mobility including bed mobility, transitional movements, performing
- Gait Training (with music): Max A of 2+ WC follow (~500 ft)