Background and Purpose

Bacterial meningitis is a serious disease that causes acute inflammation of the meninges, the lining of the brain and spinal cord, which can result in significant morbidity and mortality.1

- 15,000 to 25,000 cases in the US yearly
- One of the top 10 causes of infection-related deaths worldwide.1

Bacterial meningitis is commonly complicated by encephalitis, inflammation of the brain parenchyma.1

- 30% to 50% of survivors of bacterial encephalitis sustain neurological sequelae.

Neurological Sequelae include:

- Memory loss
- Behavioral disorders
- Speech disorders
- Difficulty concentrating

Figure 1. Types of Brain Inflammation

Meningitis
Inflammation of the meninges surrounding the brain and spinal cord

Encephalitis
Inflammation of the brain

Meningoencephalitis
Inflammation of both meninges and the brain

Patient History

52-year-old female arrived to the ICU
- Intubated, Unresponsive, Paralyzed
- Required ventriculostomy placement
- Dx: Encephalitis secondary to bacterial meningitis

Prior to admission
- Independent at home and in the community
- Lived alone in a single level home
- Worked full-time as a Certified Occupational Therapy Assistant (COTA)
- Unknown how patient contracted bacterial meningitis

Past Medical History
- Glucose intolerance
- Anxiety
- Obstructive sleep apnea
- Alcohol abuse
- Remote history of drug abuse

PT Initial Evaluation

PT evaluation and treatment 6 days after admission

- Glasgow Coma Scale: 15
- Blood Pressure 110/65 (Semi-Fowler)
- Gross UE/LE ROM: WFL
- Gross LE Strength: 2/5
- Gross UE Strength: 3+/5

IE Impairments:

- Bed Mobility
- Balance
- Transfers
- Ambulation
- Cognition
- Incontinence
- Motor Control

IE Limitations:

- Self-Care
- Social Roles
- Home Management
- Activities of Daily Living

IE Prognosis

Good Medical Prognosis;
Unknown PT Prognosis;
Positive Factors:
- Age
- Prior Level of Function
Negative Factors:
- Acuity of Illness
- Impaired Cognition & Motor Control

IE Goals

Short-Term Goals: GOALS MET
- Minimal Assistance Bed Mobility
- Supervision Sitting Edge of Bed
- 1 Person Moderate Assistance Standing
- Supervision with Transfers
- Moderate Assistance with Ambulation and FW

Long-Term Goals: GOALS UNMET
- Independent Bed Mobility
- Independent Transfers
- Independent Gait/Ambulation

Interventions

Bed Mobility
- Scooting
- Sitting Balance
- Standing Balance
- Transfers
- Gait Training

Task-Oriented Training

Figure 3. Bed Mobility Transition Technique

Side lying to Sit
Side lying to and from Supine
Sit to Side lying

Outcomes

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Initial Evaluation</th>
<th>Discharge</th>
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<tr>
<td>Bed Mobility</td>
<td>Max A x2</td>
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<td>Scooting</td>
<td>Max A x2</td>
<td>Min A</td>
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<tr>
<td>Sitting Balance</td>
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<td>Transfer</td>
<td>Did Not Occur</td>
<td>Supervision</td>
</tr>
<tr>
<td>Gait Training</td>
<td>Did Not Occur</td>
<td>MOD A x1 25 Feet</td>
</tr>
</tbody>
</table>

DC Impairments:

- Dynamic Standing Balance
- Ambulation Mod A with FW
- Dizziness

DC Limitations:

- Social Roles
- Home Management
- IADLs

Discussion

- The patient demonstrated improvement with strength, cognition, problem solving, and balance.
- She demonstrated increased independence with bed mobility, transfers, sitting balance, standing balance, and ambulation.
- The patient was safely discharged from the ICU to the Inpatient Rehabilitation Unit.

Conclusion

- Limited research regarding PT in the ICU for patients diagnosed with encephalitis secondary to bacterial meningitis
- Future research is needed in order to attain a better PT prognosis for this patient population.

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References


Figure 2. (A) Monitor with Leads (left) (B) Intensive Care Unit Patient Room (above)