**Functional Mobility Management of a Patient with Adult-Onset Hereditary Proximal Motor Neuropathy Following a Tibial Fracture: A Case Report**

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**Unique**
This patient was clinically appealing and complex because of the combination of an acute fracture due to an injurious fall and significant past medical history (PMH) of both the rare condition of adult-onset hereditary proximal motor neuropathy (AHPMN) and congestive heart failure (CHF). The chronic co-morbidities created the need for an innovative approach to treatment sequencing to potentially mitigate the risk for excessive fatigue, such as positional grouping of interventions and prescribed rest periods.

This unique opportunity to document the physical therapy (PT) management of a patient with the combination of both rare and chronic conditions makes this case a valuable addition to the existing literature.

**Description**
This patient was referred to PT after acquiring a L tibial fracture secondary to falling while walking up an inclined ramp outdoors. An open reduction internal fixation procedure was performed the following day. Based on the patient’s significant history of both AHPMN and CHF, a strengthening, conditioning, and balance program was constructed which was based on functional mobility and compensatory patterns for safe ambulation, transfers and fall risk reduction.

**Observations**

<table>
<thead>
<tr>
<th>Outcome Measure</th>
<th>Initial Evaluation</th>
<th>Re-evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Lower Extremity Functional Scale</td>
<td>31.25%</td>
<td>31.25%</td>
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<tr>
<td>B. Gait Pattern</td>
<td>Severely forward flexed trunk, with moderate bilateral genu recurvatum during weight bearing.</td>
<td>Moderately forward flexed trunk, with moderate-mild bilateral genu recurvatum during weight bearing.</td>
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<tr>
<td>Manual Muscle Testing</td>
<td></td>
<td></td>
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<tr>
<td>Left</td>
<td>Right</td>
<td>Left</td>
</tr>
<tr>
<td>C. Knee extension</td>
<td>2+/5</td>
<td>1+/5</td>
</tr>
<tr>
<td>D. Hip flexion</td>
<td>2+/5</td>
<td>3-/5</td>
</tr>
<tr>
<td>E. Hip abduction</td>
<td>4-/5</td>
<td>4-/5</td>
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</tbody>
</table>

**Gait pattern assessment**
Genu recurvatum gait with foot slap of left lower extremity through:
- **A** initial contact
- **B** loading response
- **C** midstance
- **D** terminal stance
- **E** pre-swing
- **F** initial swing

**Purpose**
The purpose of this case report was to document the outcomes of various functional mobility interventions for a geriatric patient with an acute left (L) tibial fracture secondary to a fall, adult-onset hereditary proximal motor neuropathy and CHF. This case report may help fill a gap in the literature, which is sparse with functional mobility treatment for patients with acute injury in conjunction with a rare, chronic condition.

**Foundation**
AHPMN is a subcategory of spinal muscular atrophy, which is caused by survival motor neuron gene mutation. This rare disease, affecting approximately 1 in 10,000 people, presents as proximal weakness and muscle wasting, more commonly in the lower extremities, in addition to gait unsteadiness and difficulty standing.

Additionally, the lifetime risk of developing CHF is one in five; since the diagnosis poses a risk factor for falling it may increase the likelihood of falls. Regarding seniors over the age of 65, fall-related injuries increased from 49.4% to 58.8% between 2005 and 2013, accounting for 2.5 million older adults treated in the emergency department for falls.

**Conclusions**
The significance of this work includes the potential for functional mobility improvements and independence with PT interventions, utilizing compensatory strategies, despite significant PMH and co-morbidities. Suggestions for future work related to this project could involve the utilization of functional testing in instances of acute injury in the presence of chronic conditions and proactive referral for training in fall reduction strategies for individuals identified to be at risk.

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**References**