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A case study on the effects of functional exercises in improving quality of life (QOL) in a patient diagnosed with glioblastoma multiforme (GBM)

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A case study on the effects of functional exercises in improving quality of life (QOL) in a patient diagnosed with glioblastoma multiforme (GBM)

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INTRODUCTION AND PURPOSE

- Estimated prevalence of primary brain tumors in the US population is 14 per 100,000.
- GBM accounts for 50% of primary central nerve tumors in people older than 15 years old.
- 12,820 deaths each year are due to primary and nervous system tumors.
- The purpose of this case report was to determine which aspects of the International Classification of Functioning, Disability, and Health model are the most important to consider during physical rehabilitation and possible interventions that can be beneficial for patients diagnosed with GBM.

CASE DESCRIPTION

Patient Profile

- A 50 y.o. male was diagnosed with GBM 8 months ago.
- Prior to diagnosis, patient worked full-time in a trophy store and lived independently in a second-story condominium.
- Currently, patient lives with a friend, who is also his temporary caretaker. The patient plans to transition to live in his condominium alone and is in the process of setting up IHSS for caregiver services.
- Patient’s goals included becoming more independent with his ADLs and IADLs with tasks including managing stairs, doing laundry, and toileting.

Body Structure/Function Impairments

- Impaired balance
- Coordination deficits
- R sided muscle weakness
- Dysarthria
- Hyperreflexia
- Decreased Endurance
- Impaired vision in R lower quadrant

Activity Limitations

- Decreased efficiency with ADL’s
- Unable to walk for more than 12-ft with AD
- Unable to drive independently
- Unable to manage stairs independently

Participation Restrictions

- Unable to work at trophy shop

PLAN OF CARE

Coordination

1. Sitting and standing balance while stacking cones, starting in a wide BOS and progressing to a more narrow BOS
2. Standing balance while catching and throwing a ball at target
3. Movement with music focused on coordinated movements and timing e.g. finger to nose and simultaneous contralateral hand to shoulder

Full Prevention and Balance

1. Modified tandem balance EO and EC
2. Standing balance at raised surface while reaching to touch targets
3. Standing marches with walker and min A

Gait Training on level surfaces

1. Pregait staggered stance weight shift fwd and back
2. Pregait step fwd and back
3. Gait training with FFW on level surfaces

HEP: Seated marches, seated hip abduction, standing tandem balance, STS

Frequency and Duration: 1x/wk, 3 weeks

EXAMINATION FINDINGS AND OUTCOMES

<table>
<thead>
<tr>
<th>Coordination Test</th>
<th>Initial Evaluation</th>
<th>Discharge Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R UE</td>
<td>L UE</td>
</tr>
<tr>
<td>Finger/toe-to-PT’s finger (movement accuracy)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Pronation/Supination (alternating/reciprocal motion)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Drawing a circle (movement composition)</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

OM

<table>
<thead>
<tr>
<th>BERG Balance Scale</th>
<th>Initial Evaluation</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>16/56</td>
<td>26/56</td>
<td></td>
</tr>
</tbody>
</table>

Health Related Quality of Life - 4

<table>
<thead>
<tr>
<th>Physical Health not good for: 30/30 days</th>
<th>Physical Health not good for 0/30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health not good for 5/30 days</td>
<td>Mental Health not good for 0/30 days</td>
</tr>
<tr>
<td>Felt healthy and full of energy: 0/30 days</td>
<td>Felt healthy and full of energy: 25/30 days</td>
</tr>
<tr>
<td>5x STS (modified) 46 seconds</td>
<td>19.5 seconds</td>
</tr>
</tbody>
</table>

DISCUSSION

- Functional Exercises were found to be more beneficial in managing musculoskeletal symptoms and activity/participation restrictions in people diagnosed with GBM.
- Research studies have found that functional therapeutic activities such as STS, balance, music with movement, and gait training are more beneficial in improving postural control, precise coordination, and performance of ADLs.
- Clinical decision making for the plan of care (POC) has to take into consideration the patient’s goal and maintaining/improving their QOL.
- There is a lack of research that has been conducted to establish the best rehabilitation practices.
- Outcomes suggest the significance of physical activity in the use of improving the QOL in patients with Glioblastoma.

CONCLUSION AND CLINICAL RELEVANCE

- This case study provides insight into treating patients with progressive brain tumors.
- It highlights the value of using physical activity to restore and maintain the patient’s quality of life.
- Limited treatment information is available on physical therapy for glioblastoma, thus this case study provides possible treatment options for clinicians.

REFERENCES


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