
San Marcos, Fall 2019

Research Day, San Marcos Campus

Fall 12-13-2019

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

Kathy Nguyen

University of St. Augustine for Health Sciences, k.nguyen2@usa.edu

Savonna Reed

University of St. Augustine for Health Sciences, s.reed1@usa.edu

Sepehr Rezaei

University of St. Augustine for Health Sciences, s.rezaei@usa.edu

Vanessa Rindge-Silvas

University of St. Augustine for Health Sciences, v.rindgesilvas@usa.edu

Brianne Bozzella

University of St. Augustine for Health Sciences, bbozzella@usa.edu

Follow this and additional works at: <https://soar.usa.edu/casmfall2019>



Part of the [Kinesiotherapy Commons](#), and the [Physical Therapy Commons](#)

Recommended Citation

Nguyen, Kathy; Reed, Savonna; Rezaei, Sepehr; Rindge-Silvas, Vanessa; and Bozzella, Brianne, "A case study on the effects of functional exercises in improving quality of life (QOL) in a patient diagnosed with glioblastoma multiforme (GBM)" (2019). *San Marcos, Fall 2019*. 2.

<https://soar.usa.edu/casmfall2019/2>

This Book is brought to you for free and open access by the Research Day, San Marcos Campus at SOAR @ USA. It has been accepted for inclusion in San Marcos, Fall 2019 by an authorized administrator of SOAR @ USA. For more information, please contact soar@usa.edu, erobinson@usa.edu.



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

Kathy Nguyen, SPT, Savonna Reed, SPT, Sepehr Rezaei, SPT, Vanessa Rindge-Silvas, SPT, Brianne Bozzella, PT, DPT
University of St. Augustine for Health Sciences, San Marcos, CA

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 fulltime 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

Fall 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 FWW on level surfaces

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

Frequency and Duration: 1x/wk, 3 weeks

EXAMINATION FINDINGS AND OUTCOMES

Coordination Test	Initial Evaluation		Discharge Evaluation	
	R UE	L UE	R UE	L UE
Finger/toe-to-PT's finger (movement accuracy)	2	3	2	3
Pronation/Supination (alternating/reciprocal motion)	2	3	2	4
Drawing a circle (movement composition)	2	3	2	4
OM	Initial Evaluation		Discharge	
BERG Balance Scale	16/56		26/56	
Health Related Quality of Life - 4	Physical Health not good for: 30/30 days Mental Health not good for 5/30 days Felt healthy and full of energy: 0/30 days		Physical Health not good for 0/30 days Mental Health not good for 0/30 days Felt healthy and full of energy: 25/30 days	
5x STS (modified)	46 seconds		19.5 seconds	

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

1. Hansen A, Søgaard K, Minet LR. Development of an exercise intervention as part of rehabilitation in a glioblastoma multiforme survivor during irradiation treatment: a case report. *Disability And Rehabilitation*. 2019;41(13):1608-1614.
2. Hansen A, Søgaard K, Minet LR, Jarden JO. A 12-week interdisciplinary rehabilitation trial in patients with gliomas - a feasibility study. *Disability & Rehabilitation*. 2018;40(12):1379-1385.
3. Li KZH, Bherer L, Mirelman A, Maidan I, Hausdorff JM. Cognitive Involvement in Balance, Gait, and Dual-Tasking in Aging: A Focused Review From a Neuroscience of Aging Perspective. *Frontiers in Neurology*. 2018;9. doi:10.3389/fneur.2018.
4. Tomljanović M, Spasić M, Gabrilo G, Uljević O, Foretić N. Effects of five weeks of functional vs. traditional resistance training on anthropometric and motor performance variables. *Kinesiol Int J Fundam Appl Kinesiol*. 2011;43.(2.):145-154.

ACKNOWLEDGEMENTS

Our sincerest gratitude to the patient, the Neuromuscular III faculty, contributing faculties, and student helpers.