

Repercussion of palliative care on survival in patients with High-grade Glioma

Abstract

Aim: To determine the influence of education in early neuro-palliative care, on the survival of patients diagnosed with high-grade glioma, to evaluate the overload associated with the care of such patients.

Method: was an observational, cross-sectional, descriptive, and exploratory study in 52 patients and caregivers with High-grade glioma tumors as the pathological diagnosis, treated at the Institute of Neurology and Neurosurgery of Havana from January 2019 to January 2020.

Results: The care provision system was in charge of family members in 51.9% of the patients, predominantly female in this task; 45 (86.7%), 42.2% of which maintained a labor relationship, with a mean age of 53.9 years. The Zarit test was applied in the 52 caregivers, intense overload was recorded in 33 (63.5%), mild in 10 (19.2%) and no overload in 9 (17.3%). Patients in whom their caregivers received education in palliative care at the time of HGG diagnosis had 57.1 more days of survival, unlike those who received it in the period of neurological deterioration (241.7 vs 184.6 days). Survival time was influenced by the record of caregiver burden.

Conclusion: The overall survival life time was directly related to the caregiver's education in palliative care and the time it was received, early palliative care education, could influence prolonging life.

Keywords: end of life, palliative care, family caregivers, high-grade glioma, malignant brain tumor

Volume 11 Issue 2 - 2021

Gloria Esther Castillo-Lara,¹ Sonia Edith Hanco-Huilla,² Gloria Esther Lara-Fernández,³ Gabriel Andres Peña-De los Santos,⁴ Gabriela Leyva-Coll,⁵ Rocio Anel Loaces-Padrón⁶

¹Neurosurgery Service, University of Medical Sciences/ Institute of Neurology and Neurosurgery, Cuba

²Neurosurgery Service, University of Medical Sciences / Institute of Neurology and Neurosurgery, Cuba

³Division of Neuroepidemiology, University of Medical Sciences / Institute of Neurology and Neurosurgery, Cuba

⁴Neurology Service, University of Medical Sciences/ Institute of Neurology and Neurosurgery, Cuba

⁵Faculty of Medical Sciences "Manuel Fajardo" /University of Medical Sciences, Havana, Cuba

⁶Policlinic Service / Hospital "Guillermo Kaelin de la Fuente", Perú

Correspondence: Gloria Esther Castillo Lara, Neurosurgery Service at Institute of Neurology and Neurosurgery, Havana, Cuba. 29th Av and D street, Havana, Cuba. Tel +5353255768, Email castillolarag@gmail.com

Received: March 10, 2021 | **Published:** April 13, 2021

Abbreviations: HGG, High-grade glioma; QOL, quality of life

Introduction

Primary brain tumours account for an estimated 2% of malignancies worldwide. Approximately 5000 people are diagnosed with a primary malignant brain tumours in the United Kingdom and 17,000 new cases of high-grade glioma (HGG) are diagnosed in the United States each year.¹ Gliomas are the most common type of primary brain tumours, accounting for up to 80% of malignant brain tumours overall. HGG occurs most commonly between the fifth and seventh decades. It is an aggressive disease, with a median survival time of 12 to 15 months.^{2,3} The five-year survival rate is 10%,² therefore efforts to provide tumor progression-free survival with an acceptable quality of life are a priority.^{4,5}

The symptom burden for people diagnosed with a high-grade glioma is substantial. There can be profound effects on physical, neurocognitive, and social functioning from an early stage in the illness. This population of patients also frequently experience personality changes, a decrease in mental capacity, and mood disturbance. These effects can be exacerbated by aggressive treatment regimens.^{6,7} The disease trajectory is unpredictable and characterized by periods of sudden acute deterioration followed by a period where the clinical condition appears to plateau.² Patients with HGG in the advanced stages of their disease experience the exacerbation of the need for psychosocial understanding, more information regarding their prognosis and evolution.⁸

The frequency and severity of symptoms increase with tumor growth and may be an early sign of progression.⁹ During the

development of their disease, patients and their caregivers have a need for care and psychological support with different characteristics than patients with cancer in another location.¹

With the ageing of the population, the incidence of cancer is increasing alongside the demand for palliative care.⁸ Palliative care is an interdisciplinary medical specialty dedicated to relieving the symptoms and stress associated with serious illness, with the goal of improving quality of life for patients and caregivers, it represents providing medical, psychological and social advice, with the aim of maintaining and extent an adequate survival time and providing a dignified death to the patient.¹ Although disease progression is often more aggressive for central nervous system tumors than for other neurological diseases, there is limited knowledge about symptom prevalence and relief among these disease groups at end of life.¹⁰ The neurocognitive effects of the disease coupled with the increased dependency and social isolation can result in changes to relationships with family members/care providers, which are not so commonly observed in the context of other malignancies.² The intention of this study was to determine the influence of education in early neuro-palliative care, on the survival of patients diagnosed with high-grade glioma, to evaluate the overload associated with the care of such patients.

Method

Study population and data collection:

It was an observational, descriptive, and exploratory study. The investigation was carried out in a single measurement (cross-sectional). The population consisted of patients with a confirmed diagnosis of high-grade gliomas and their primary caregivers, treated

at the Institute of Neurology and Neurosurgery of Havana from January 2019 to January 2020.

The total sample consisted of 52 patients who adhered to the inclusion criteria in the study. Inclusion criteria were adult patients (≥18 years old) who had HGG tumors as the pathological diagnosis.

Study variables

The variables used were organized according to the clinical and epidemiological characteristics of the patients. Clinical - epidemiological: age, sex, type of care, survival (days), presence of the following symptoms: headache, seizures, nausea, shortness of breath, anxiety and depression. The presence or absence of care was determined and whether it was under palliative care counseling, specifying whether it was given at the time of diagnosis of HGG or during the stage of neurological deterioration.

Variables used for the caregiver were age, sex, level of education, familiarity with the patient, economic remuneration and degree of burden according to the Zarit caregiver burden scale. The Zarit caregiver burden scale was used to measure caregiver burden: This test measures the degree of subjective burden in people who are in charge of caring for a patient. It consists of 22 items related to the feelings of the caregiver when caring for another person, each of which is evaluated in a frequency gradient ranging from 1 = never to 5 = almost always. At the end, all the points collected in each item are added and they are valued according to the following criteria: • 47 points = no overload. • From 47 to 55 points = slight overload. • 55 points = severe overload. It is a validated instrument in concept and construct. The internal consistency of the scale is 0.91 and the test-retest reliability is 0.86.

The survival of the patients was evaluated in relation to the degree of overload of the caregivers according to the Zarit caregiver burden interview.

Statistical analysis

Descriptive statistics were used to present patient characteristics, symptom presence, symptom relief, and palliative care. Logistic regression models were used to describe symptoms, symptom relief, and palliative care indicators, while adjusting for covariates. Logistic regression models were used for indicators that had only

two categories. Statistical significance was defined as $p < 0.05$. The statistical analyses were performed using SPSS version 22.

Ethics standards

The participation of patients and relatives in the study was completely voluntary, prior authorization by informed consent. The data obtained was exclusively intended for scientific use, guaranteeing the confidentiality of the participants.

Results

During a year of research, of the 52 patients who were included in the study, 30 (57.7%) corresponded to the female sex with a mean age of 46 years (min 25: max 82), a registered standard deviation of 13.6 years for women. The men were a total of 22 (42.3%) with a mean age of 44.6 years (min 22: max 74) with a standard deviation of 15.5 years. Associated with the evolution of the patients, symptoms such as headache, seizures, deterioration of consciousness and respiratory distress are related. Headache and seizures predominate in the female sex, unlike in the male sex, where the deterioration of the state of consciousness and respiratory distress predominated in advanced periods of the evolution of the disease.

The care provision system was in charge of family members in 51.9% (27 family members) of the patients, predominantly female in this task; 45 (86.7%), 42.2% of which maintained a labor relationship, with a mean age of 53.9 years, without financial remuneration due to their performance as the patient's primary caregiver. The Zarit caregiver burden interview was applied in the 52 caregivers, evaluating the overload derived from patient care, intense overload was recorded in 33 (63.5%), mild in 10 (19.2%) and no overload in 9 (17.3%).

Overall survival averaged 245 days (range 3-527 days), with a difference of 16.5 days longer in males (255 days overall survival) than in females (239.3 days). Survival was directly related to the caregiver's education in palliative care and the time it was received (at the time of diagnosis or in the period of neurological deterioration). Patients in whom their caregivers received education in palliative care at the time of HGG diagnosis had 241.7 days of survival, presenting 57.1 more days of survival, unlike those who received it in the period of neurological deterioration; 184.6 days, not being statistically significant Table 1.

Table 1 Overall survival average (days) according to palliative care advice

Palliative care advice	Moment of palliative care advice			p value
	Neurologic impairment	HGG Diagnosis		
No (n: days) (36: 252,171429)	-	-		
Yes (n: days) (16: 229,5)	2,41,72,72,727	18,46,66,667		P 0,26758286
Palliative care advice	Caregiver burden according to Zarit scale			
	Intense n (%) 33 (63.5)	Low n (%) 10 (19.2)	No overload n (%) 9 (17.3)	
Yes (n: survival days) (16: 229,5)	32,22,85,714	223,75	20,66,66,667	P 0,00015964
No (n: survival days) (36: 252,171429)	309,56	1,72,66,66,667	12,75	

Survival time was influenced by the record of caregiver burden and the education received in the care at the time of the neurological and physical deterioration of the patient, a long-term survival time (322.3 days) being directly related to the intense strain of caregivers, being significant the Overload relationship with palliative care education (Figure 1). Source: Zarit caregiver burden interview.

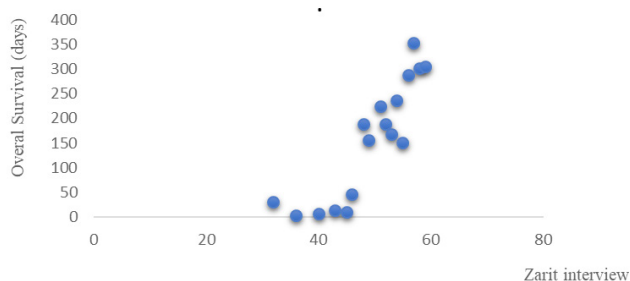


Figure 1 Overall survival by caregiver burden according to Zarit interview.

In addition, the difference in survival of 22.5 days in patients whose caregivers did not receive palliative care counseling is striking, which could be related to the molecular and genetic subtypes of each specific lesion. However, in patients who did receive palliative care education, there was a difference of 23 more days in those who received it at the time of HGG diagnosis (342 days), compared to those who received it at the time of neurological deterioration in advanced stages of the disease (319 days) (Figure 2).

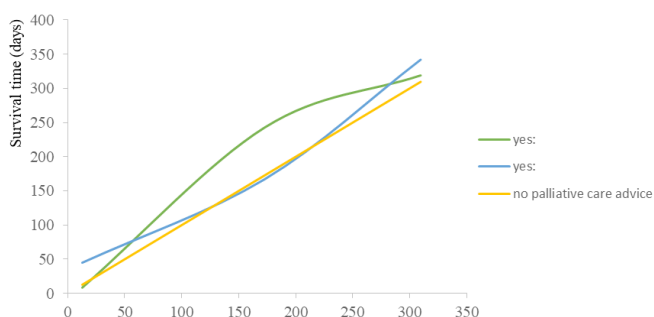


Figure 2 Overall survival according to palliative care advice.

Source: Zarit caregiver burden interview

Discussion

The longer lifetime in patients whose caregivers had palliative care advice, demonstrates the effectiveness of this education in preventing complications associated with the natural evolution of the disease and recurrent hospitalization that occurs in this type of patients.

HGG has a unique clinical course that differs from that of other advanced cancers in including early cognitive and functional decline, seizures and neurologic deficits, and facing the end of life almost from the time of diagnosis; all of these aspects have a disproportionately negative impact on QOL. HGG also carries a significant economic burden, with median direct cost per patient of \$184,000, which is higher than for other types of cancer (e.g., the median direct cost in lung cancer is ~\$159,000 per patient)¹

Patients and caregivers need precise information about their diagnosis, prognosis, and further therapies, but this may often be overlooked by healthcare professionals, because of insufficient communication skills. The lack of information makes decision-making more difficult both for patients and their caregivers.⁹

The National Institute for Health and Clinical Excellence recommends that patients with a primary brain tumor could benefit from palliative care at the time of diagnosis, preferably, promoting the integration of neurological, oncological and psychological services during the course of the patient's illness.² However, the provision of palliative care for patients with this pathology has been poorly defined, and studies are currently required to define the interventions that show the most beneficial results.

Researchers at the University of Glasgow have led the development of approaches to map palliative care internationally and have conducted several benchmarking studies to inform palliative care policy, education and service development internationally.^{11,12} In our study, we observed that survival in patients who received palliative care counseling at the time of diagnosis or early (during the 8 weeks after diagnosis according to the American Society Clinical Oncology), was greater in approximately two months, however the need to incorporate this type of counseling in the doctors who provide patient care from the onset of symptoms, diagnosis, oncologic treatment and stay in the community, being ideal coordinated care in this regard, which reduces patient anxiety regarding its evolution, the understanding of the caregiver and the family of the prognosis and the demand of the health system for symptoms corresponding to the neurological and physical deterioration accompanying the last days of the disease.

The crucial moments in the course of the disease are: the diagnosis, the period of oncological treatment and the moment in which the final neurological deterioration begins,¹³ changing the demands for attention and the need for information, which is closely related to the demand for hospital services, care burden and dignified survival of the patient.

"Caregiver burden" refers to the stress placed on caregivers from providing home care, which has the potential to cause negative psychological, behavioral, and physiologic effects.^{14,15} The main purpose of palliative care in patients with a diagnosis of HGG is to educate family members and caregivers about the psychosocial change represented by said diagnosis, the need to make accurate decisions in a period of survival that will represent a high burden for the caregiver, despite receiving education for proper management of the disease.¹⁶⁻²⁰

Several factors have influenced the caregiver's burden such as provision of outpatient or hospital palliative care, demand for care of the patient greater than what is really necessary^{21,22} associated with the lack of economic remuneration; is frequently related to this task. Various mechanisms for solving this problem have been proposed, including the division of care time with health personnel trained for such purposes, economic remuneration and periodic psychological support, which becomes more demanding, directly proportional to the survival of the patient or in the cases of neurological deterioration and early death, given by the hospital stay and the lack of understanding of the treatments and the possible evolution.

However, systematic or institutionalized support structures for family caregivers were not established in any country.^{23,24}

Strengths and limitations of the study

The number of patients and caregivers is small, which limits the generalizability of the results obtained. This makes multicenter studies necessary to know the real incidence of and impact of palliative care on the survival of patients with this diagnosis.

Conclusion

The overall survival lifetime was directly related to the caregiver's education in palliative care and the time it was received, early palliative care education, could influence prolonging life, which is directly related to an increase in caregiver overload.

Acknowledgments

None.

Conflicts of interest

The authors declare no conflicts of interest.

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