

The Benefit of Palliative Care on Brain Cancer Patients' Quality of Life

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"The true measure of any society can be found in how it treats its most vulnerable members"

– Mahatma Gandhi

Abstract

Brain cancers are characterized as primary and secondary tumors based on their location and tissue of origin. Primary brain tumors arise from the brain and spinal cord. Secondary brain tumors metastasize or spread to the brain from other sites of primary cancers throughout the body. The metastatic lesions are identical to their disease of origin. Primary and secondary brain tumors have commonalities in terms of symptom burden and impacts on quality of life, but they have very distinct differences in terms of management. Given the aggressiveness of neurological disease and of its severity of symptoms, oncologists must engage in advance care planning with their patients and their caregivers. They should also establish psychosocial support, address physical, social, and spiritual suffering; and involve specialty palliative care to address the morbidity in this population. We call for a standardized set of guidelines in the United States to guide clinical decision making with regard to patients' complex symptom burdens and to improve patient and caregiver quality of life.

Keywords: Palliative Care; Brain Cancer; Quality of Life

Introduction

Primary brain tumors arise from the brain and spinal cord. The World Health Organization (WHO) classifies grades III and IV gliomas, or high-grade gliomas, as the most malignant and aggressive forms of primary brain tumors [1]. Gliomas are tumors that arise from glial cells and function to support neurons and enhance their functioning in the brain and spinal cord. They are characterized by grade depending on the type of cell and tumor growth potential on a scale of I-IV. Grade III can be defined as anaplastic astrocytoma, anaplastic oligodendroglioma, anaplastic oligoastrocytoma, or anaplastic ependymoma depending on the cell type origination. Grade IV glioma is also known as glioblastoma. Once detected, the mean patient survival is 15 months [2] and patients have less than 10% five-year survival rate [3].

Secondary brain tumors are tumors that have metastasized or spread from other cancers throughout the body to the brain. They are classified according to their cancer of origin as they are the same disease regardless of location. The most common primary cancer types that yield these brain metastases are lung, kidney, melanoma, breast, and colon cancers [4]. Secondary brain tumors are ten times more common than primary brain cancer, and about 20 - 40% develop brain metastases as patients are living longer with their diseases due to advances in treatment [5]. Primary and secondary brain tumors have common factors in terms of symptom burden and impact on quality of life, though their management differs.

Commonalities of Symptom Burden in Primary and Secondary Brain Tumors

Common to both primary and secondary brain cancers, patients experience a wide range of harsh and often debilitating symptoms such as raised intracranial pressure causing headaches, seizures, cancer cachexia, insomnia and fatigue, tumor hemorrhaging, altered

mental status, and cognitive impairment depending on the location of the primary tumor or metastatic lesion [6] (Figure 1). Other symptoms may occur depending on the site of the lesion, such as impact on memory, language, vision, and coordination [3]. Not only do these symptoms arise from the tumors themselves, they also arise as side effects from cancer-directed therapy [7]. Symptoms typically worsen as the tumor progresses, and thus there is a critical need for palliative or supportive care in order to alleviate these burdens on patients' quality of life.

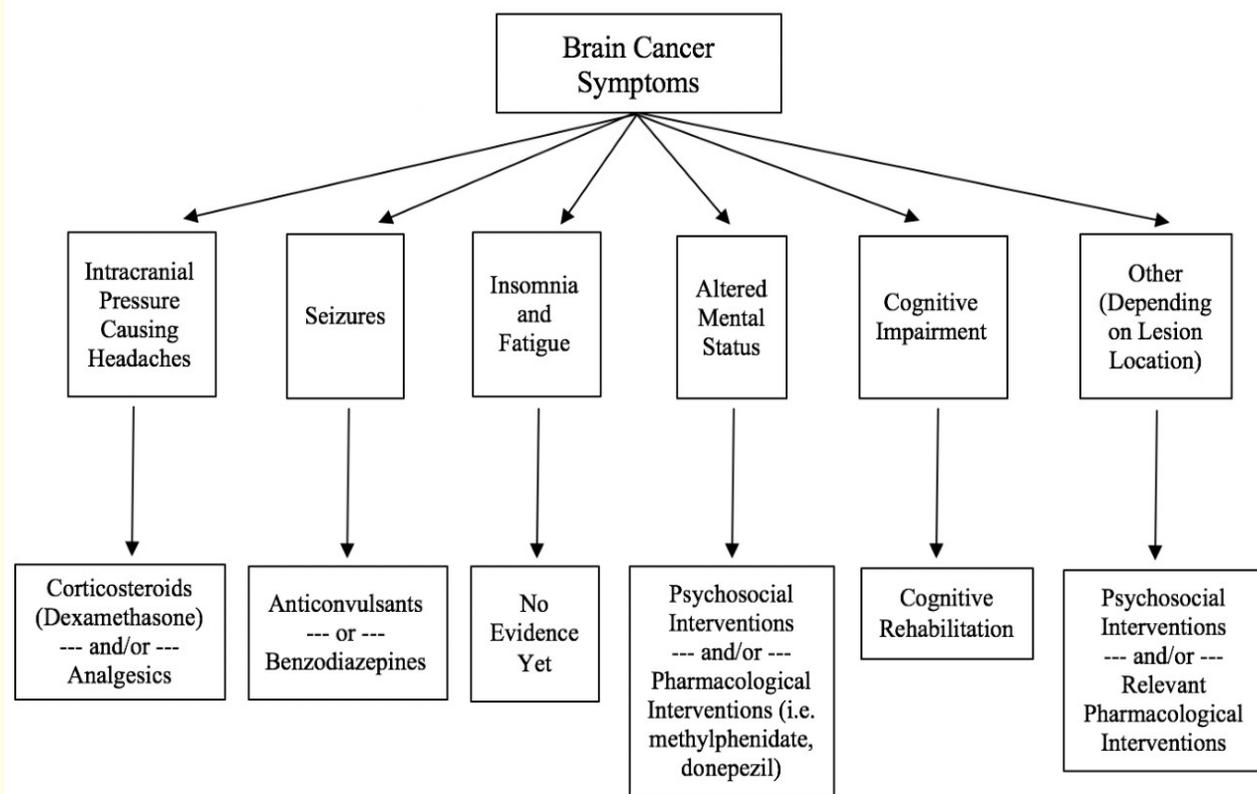


Figure 1: Palliative Care Recommendations Concerning the Treatment of Brain Cancer Symptoms. Adapted from the EANO Guidelines for Palliative Care in Adults with Glioma [9].

Corticosteroids, such as dexamethasone, can be used to relieve headaches and aid in patients' alertness [4,8]. Raised intracranial pressure, caused by edema or increased brain tumor growth, leads to unbearable headaches, often resulting in hospitalization. As patients near the end of their lives their headaches may worsen, and thus stronger analgesics and opioids should be considered [9].

Seizures are common in both primary and secondary brain tumors, though they are 24% less prevalent in secondary brain metastases [4]. They often persist until end-of-life, and if uncontrolled, seizures can lead to hospitalization and diminished quality of life [9]. Anticonvulsants should be used once a patient has a seizure due to the risk of recurrence [4]. If patients are unable to swallow near the end-of-life, sublingual, subcutaneous, and intravenous formulations of benzodiazepines can be used to control seizures [6].

While there are recommendations for measures to alleviate other grave symptoms, additional research is needed to establish standards in other aspects of palliative care given its importance and necessity in patient care. A 2010 study by Temel, *et al.* showed that

patients who received palliative care earlier on in their treatment course had significant quality of life, mood, and symptom management improvements, as well as less aggressive care yet prolonged survival near the end-of-life stages [4].

Differences in Management between Primary and Secondary Brain Tumors

Current therapies for primary brain tumors include surgical resection, chemotherapy, radiation, low-intensity tumor treating electric field (Optune®) therapies, and symptom and psychological support in the form of primary or specialty palliative care. Additionally, basic science and clinical trials to target certain biomolecular pathways are underway. Despite progress with regard to novel therapeutic strategies to treat gliomas, prognosis for these patients remains poor. Thus, there is a critical need to find novel therapeutic strategies that may be used alongside current treatment options to increase longevity and improve quality of life.

Secondary brain tumors differ from primary tumors by responding better to systemic treatment given that they represent the same disease as their location of origin. Although patients with secondary tumors may undergo surgery, radiation, and chemotherapy treatments like those with primary brain tumors, this population has access to more targeted therapies, such as Trastuzumab for metastatic breast cancer to the brain or Erlotinib for non-small cell lung cancer to the brain [10-12]. Patients may also undergo immunotherapy treatments depending on the original cancer type.

Although management may differ between the two tumor types, patients and their caregiver(s) all undergo high symptom and quality of life burden and as such, palliative care measures must be established early on upon diagnosis. This advanced care planning highly benefits the patient population, especially those who experience depressive symptoms [13].

Ethical Tenets of Patient and Caregiver Care

There is a culture of avoidance in the United States healthcare system, with physicians confusing the idea of 'shared responsibility' within a patient's multidisciplinary team of doctors with 'others' responsibility, thereby deflecting their responsibility to establish advance care planning earlier in the patient's illness course [14]. Given the severity of these neurological diseases and their aggressive potential to suddenly change, advanced care planning involving the patient, caregiver(s), and clinician is crucial while patients are still able to provide thoughtful and informed consent about their goals of care [14]. The gravity of brain cancer is difficult to process for patients, and thus it is the clinician's ethical imperative to involve the patient and caregiver(s) in discussions about severity of the diagnosis, the projected course of the disease, and possible symptoms and other potential sources of suffering. Establishing patients' end-of-life wishes earlier can prevent potentially unnecessary hospitalizations and decrease risk of the caregiver trauma that may result from performing extraordinary measures such as CPR on terminally ill patients [4].

Access to medical care, palliative treatments, and hospice care should be offered to patients in the United States irrespective of insurance with the patient's primary oncologist at the forefront of patient care. Patients with primary malignant brain tumors have inadequate access to hospice care in the United States due to inconsistent access to health insurance. One study suggests that 24% of patients with primary metastatic brain tumors (n = 383) and 32% of patients with secondary metastatic brain tumors (n = 940) received late (1 - 3 days prior to death) or no hospice care at all [15]. At end-of-life stages, patients are severely neurologically debilitated and thus may not benefit from hospice care as much as they would be able to had there been advanced care planning. Hospice must also tailor its services to address the complexity and severity of neurological diseases, and clearer avenues of communication are necessary between the primary oncologist and hospice teams to provide the best possible patient-centered care.

In order to optimize brain cancer patients' quality of life, specialty palliative care should be incorporated into patient treatment plans from the time of diagnosis. The European Association for Neuro-Oncology (EANO) established guidelines to reduce these patients' symptom burdens and improve both their and their caregivers' quality of life [9]. We call for the United States to also establish guidelines to standardize care for this vulnerable population, as Americans with advanced brain tumors also have the right to relief from pain and suffering.

Conclusion

Palliative care is an often overlooked and underutilized part of comprehensive care for brain tumor patients that should be integrated early after diagnosis for both primary and secondary brain cancers. Despite their differences in management, both primary and secondary brain tumor patients experience similar symptom morbidity that impacts their quality of life. While the European countries have established palliative care guidelines based on clinical evidence and expert consensus, the United States continues to lag behind. We recommend the creation of palliative care guidelines within the United States with the aim of improving overall quality of life for brain tumor patients.

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