

Patient Safety Concerns for Cognitively Impaired Patients With Brain Tumors

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Patients with malignant gliomas often have safety concerns not common in patients with other types of cancer. Neurologic and cognitive deficits make the care of such patients more complex, with much of the burden of care falling to the primary caretaker and family.

Malignant gliomas are the most common form of primary brain tumor in adults. Each year, about 12,000 new cases are diagnosed in the United States (Central Brain Tumor Registry of the United States, 2009). The tumors and their treatments often cause neurologic and cognitive dysfunction that make care for such patients more complex. Depending on the size and location of the tumor and type of treatment, patients may have a variety of neurocognitive issues (see Figure 1).

Neurocognitive testing can be helpful in determining a patient's cognitive deficits (National Institute of Neurological Disorders and Stroke, 2004). Identifying a cognitive deficit allows the family, patient, and healthcare team to develop a safe plan of care. Cognitive rehabilitation efforts may address issues caused by the tumor or by therapy, such as chemotherapy and radiation therapy. This typically is performed by a neurologist or neuro-psychologist.

Alterations to the home often are necessary to improve safety and reduce risk of injury. Patients who are forgetful and at risk for wandering may require door alarms. "Child-proofing" items may be useful. For example, safety covers over stove knobs may reduce the risk of burns. A home emergency alert system may provide additional peace of mind for a patient and family if someone is not able to be home with the patient 24 hours per day.

Approximately 20%–62% of patients with malignant gliomas are at high risk for seizures at some point during diagnosis (Wen, MacDonald, & Gigas, 2005). Seizures often provide the first indication of an underlying tumor. Patients with

temporal lobe tumors tend to have olfactory seizures or hallucinations and are at risk for focal or generalized seizures (Glantz & Edwards, 2003). Prolonged or permanent focal deficits can occur in patients with brain tumors following focal or generalized seizures (Glantz & Edwards, 2003). Such deficits may increase the significance of a patient's impairment and further impact quality of life.

Frequent seizure activity requires aggressive anticonvulsant therapy. Anti-seizure medications are not without their side effects. Approximately 24% of patients on antiseizure medication will develop side effects that affect quality of life, thus requiring a change in medication (Glantz et al., 2000). The safe care of such patients is difficult without adequate family involvement or supportive care from the healthcare team.

Family members should be instructed on how to maximize safety during an episode of seizure activity. The priority should be to avoid trauma to the head. If possible, the patient should be lowered to a lying position and turned onto his or her right side to reduce the risk of aspiration.

Increased intracranial pressure is common in patients with malignant gliomas. Those who have had a gross total resection generally do not require long-term steroids. Those who have had a partial resection or biopsy typically need steroids for the

duration of radiation and often long term (Kesari, Paleologos, & Vick, 2003). The degree of intracranial pressure generally is intensified when a person is lying prone. Sleeping on two pillows or using a foam wedge may help elevate the head to 30 degrees. This gentle elevation may reduce the risk of increasing peritumoral edema.

The most commonly used medication for peritumoral edema is dexamethasone, a corticosteroid typically given in doses of 4–24 mg daily, divided (Kesari et al., 2003). Patients who require long-term use of dexamethasone need additional medications to manage side effects. Prophylactic use of an H₂ antagonist or proton pump inhibitor should be considered to reduce indigestion and gastrointestinal ulceration (Marcus & McCauley, 1997). Initiating prophylaxis for *pneumocystis jiroveci* pneumonia with sulfamethoxazole and trimethoprim, mepron, or dapsone is very important for all patients on steroids (Hughes, 1991). Pentamidine inhalation may be substituted. One of the most troubling side effects of dexamethasone is steroid myopathy. Patients can develop myopathy, generally of the long muscles, after only several weeks of steroid treatment. This may severely impact mobility, thus altering the level of independent function. This contributes to increased risk of additional medical complications such as thromboembolism.

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