

Introduction^{1,2}

- Metastatic brain cancer, also known as secondary brain tumors or brain metastases, occurs when cancer cells from another part of the body spread to the brain.
- Metastatic brain tumors are 10 times more common than primary brain tumors.
- The most common types of cancer that can spread to the brain are cancers of the lung, breast, skin, colon, kidney, and thyroid.
- Metastatic brain tumors can grow rapidly, crowding or destroying nearby brain tissue. A patient may have multiple metastatic tumors in different areas of the brain.
- The most common symptoms of brain metastases include:
 - Headaches
 - Seizures
 - Weakness in the arms or legs
 - Loss of balance
 - Memory loss
 - Speech disturbance/problems talking
 - Behavior and personality changes
 - Blurred vision/vision disturbance
 - Numbness
 - Hearing loss

Medications to Manage Symptoms^{3,4,5,6}

Symptom	Class	Considerations	Medications and Dosing
Inflammation and edema	Corticosteroids	<ul style="list-style-type: none"> • Dexamethasone (Decadron[®]) is the drug of choice due to duration of action, minimal sodium and water retention side effects compared to other corticosteroids, low incidence of steroid-induced psychosis and infection • Decrease inflammation and reduces tissue edema • Potential side effects include weight gain, hyperglycemia, GI upset, insomnia, acne, thinning of the skin, depression, delirium, and anxiety 	<ul style="list-style-type: none"> • Dexamethasone starting doses range from 4 to 8 mg per day in one or two divided doses with titration to higher doses in patients with more severe symptoms or those who do not respond within 48 hours • Administer corticosteroid doses no later than 2 pm to minimize insomnia and restlessness • Glucocorticoids improve neurologic symptoms in up to 75% of patients with cerebral edema and are indicated in any symptomatic patient

Symptom Management of Brain Metastases

Symptom	Class	Considerations	Medications and Dosing
Seizures	Anticonvulsants	<ul style="list-style-type: none"> Up to 40% of patients with brain tumors have had a seizure at the time of diagnosis and another 20% develop seizures during the illness There is no evidence that prophylactic anti-epileptic drugs in patients who have not had seizures will prevent future seizures Based on the lack of evidence for benefit, anticonvulsants can be safely discontinued in patients with brain tumors who have never had a seizure, but it is preferred to taper over time to reduce withdrawal symptoms Levetiracetam (Keppra[®]) is preferred because it does not have relevant drug interactions and has 100% bioavailability for both oral and IV 	<ul style="list-style-type: none"> For patients with a history of seizures, the second - generation anticonvulsant levetiracetam (Keppra[®]) at a starting dose of 500mg 1 tablet po bid for seizure prevention as a maintenance therapy First generation anticonvulsants including phenytoin (Dilantin[®]), carbamazepine (Tegretol[®]), divalproex (Depakote[®]) and valproic acid (Depakene[®]) used as monotherapy or in combination with levetiracetam or gabapentin (Neurontin[®])
Acute Seizures	Benzodiazepines	<ul style="list-style-type: none"> For acute seizures lasting longer than 1 minute Compounded diazepam rectal suppositories or commercial diazepam rectal gel (Diastat[®]) should be readily available for initial control Sublingual lorazepam concentrate is an alternative option for acute repetitive or prolonged seizures 	<ul style="list-style-type: none"> Starting dose diazepam 10mg suppository q 15 min as needed for acute seizures up to a maximum of 3 doses Lorazepam dose ranges from 0.5 to 2mg

References

1. Bettegowda C. Metastatic Brain Tumors. Hopkins Medicine: Health. 2024. [Link](#)
2. Mayo Clinic. Brain metastases. Mayo Clinic: Diseases & Conditions. 2022 Oct. [Link](#)
3. Lin X, et al. Treatment of brain metastases. *J Clin Onco*. 2015 Oct;33(30):3475-3484.
4. Fonkem E, et al. The role of levetiracetam in treatment of seizures in brain tumor patients. *Front Neurol*. 2013; 4:153. [Link](#)
5. Connelly J, Weissman D. Seizure Management in the Dying Patient. Palliative Care Network of Wisconsin. 2023 Nov. [Link](#)
6. Ryken T, Kuo J, et al. Guidelines for the Treatment of Adults with Metastatic Brain Tumors The role of steroids in the treatment of adults with metastatic brain tumors. *Neurosurgery*. 2019. [Link](#)