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Assessing the Safety of an Active Surveillance Strategy for the Management of Brain Metastases in Patients Receiving Central Nervous System Penetrating Systemic Therapy

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Abstract

Objectives:

Surgery and radiation therapy are standard first-line treatments for brain metastases due to the low intracranial efficacy of traditional chemotherapy. However, as CNS penetrating systemic therapies are developed, they are increasingly used instead of local therapies as first line treatments. There is little evidence to guide the management of patients undergoing such treatments, neither for the optimal frequency of imaging surveillance, nor for safety outcomes. Here we assess the surveillance strategies currently in use at a single institution and associated safety outcomes.

Methods:

We reviewed the records of 27 patients with brain metastases, evaluated from 09/2021-09/2024, who were treated with systemic therapy alone prior to local therapy. We assessed time from diagnosis to 1st, 2nd, and 3rd surveillance MRI, incidence of local intracranial progression, and occurrence of safety events, defined as increased steroid use, surgical intervention, or neurologic death. Patients were stratified by whether the treatment strategy was supported by the 2021 ASCO-SNO-ASTRO treatment guidelines. Time-to-event analyses were conducted using competing risks approach.

Results:

Median follow up was 177 days. Treatment approach met ASCO-SNO-ASTRO guidelines for 11/27 patients. Osimertinib was used in 5 cases and ipilimumab/nivolumab in 4 cases. Median time to 1st MRI was 45 days for non-guideline patients vs. 43 days for guideline patients. Time to 2nd MRI was 95 days vs. 96 days, respectively. Time to 3rd MRI was 198 days vs. 200 days, respectively. Local and distant brain failures occurred as first events in 13 and 4 cases, respectively. No safety events were observed. 12 patients underwent salvage SRS, 3 underwent WBRT, and 2 declined local therapy.

Conclusion(s):

The surveillance approach utilized for monitoring upfront systemic therapy alone was similar for guideline and non-guideline patients and not more intensive than standard NCCN surveillance guidelines after SRS, which recommend follow up MRI every 2-3 months. Local intracranial failures were common but did not result in safety events. A strategy of active surveillance of brain metastases for patients receiving CNS-penetrating systemic therapies appears safe and feasible in this retrospective series. However, further prospective study is warranted.