

Title: Central Nervous System Tropism in CIC-Rearranged Sarcoma: A Rationale for Upfront Screening

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Significance & Hypothesis/Techniques: CIC-rearranged sarcoma is a highly aggressive malignancy with a recognized propensity for central nervous system (CNS) metastasis. However, current guidelines do not recommend routine neuro-axis imaging, potentially resulting in inadequate surveillance and delayed diagnosis

Innovation: To our knowledge, this is the first study to specifically characterize the incidence, clinical presentation, and radiologic features of CNS metastasis in CIC-rearranged sarcoma.

Approach (Materials & Methods): We retrospectively analyzed 20 patients with molecularly confirmed CIC-rearranged sarcoma treated at a single institution. The incidence, radiologic patterns, and clinical presentation of CNS metastases were evaluated to assess the efficacy of current symptom-driven imaging practices.

Results: Nine patients (45%) developed CNS metastases during their disease course. Since baseline and interval CNS imaging were not routinely performed, detection was almost exclusively driven by acute neurological symptoms. Lesions were frequently hemorrhagic, multifocal, and associated with severe morbidity at the time of discovery. Outcomes for patients with CNS involvement were universally poor (median survival post-CNS diagnosis < 3 months).

Discussion & Impact: The 45% incidence rate may represent an underestimation of true CNS involvement, and the multifocal presentations likely reflect delays in diagnosis. Symptom-driven imaging fails to identify intracranial disease before it becomes catastrophic. Routine baseline MRI of the brain and spine, followed by consideration of interval neuro-axis surveillance, should be recommended for all patients with CIC-rearranged sarcoma. Neuro-axis imaging should be incorporated into initial staging and consideration of surveillance algorithms in order to ensure adequate disease staging and detect asymptomatic, treatable disease.

References

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