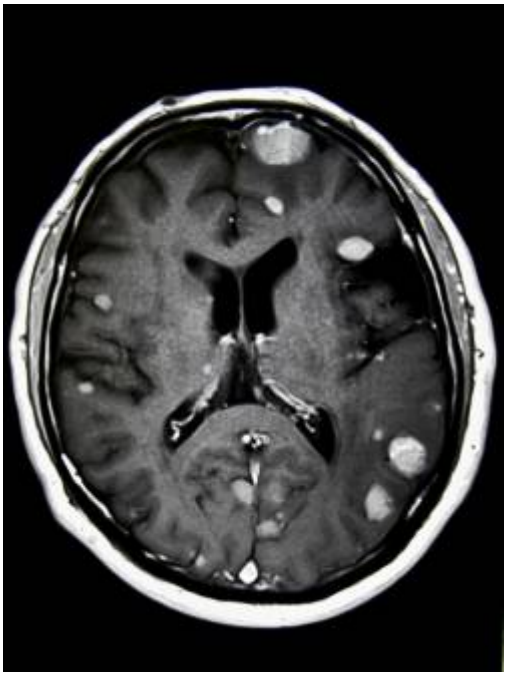
Brain metastases prognosis

- Population-Based Real-World Outcomes of Post-Operative Adjuvant Brain Cavity Radiotherapy Versus Observation
- Construction of a Prognostic Model Using RNA Processing Factor Genes and the Key Role of NSUN6 in Glioma Outcomes
- TMEM115: a promising marker for glioma immunotherapy and prognosis
- Synergy Assay for Screening Small Molecule Combinations in Brain Cancer Stem Cells
- Neuropsychological outcome in pediatric brain tumor survivors treated with proton radiation prior to age 4 years
- Anesthetic and perioperative management of pregnant patients undergoing neurosurgery: a case series from a single center in Morocco (2017-2024)
- Impact of Extent of Resection on Survival in Brain Metastasis: An Analysis of 867 Patients
- Shared decision-making interventions in neuro-oncology practice: a systematic review



In a systematic review and meta-analysis of patients with Intracranial metastatic disease in the setting of limited or stable extracranial disease, the limited systemic disease was associated with improved OS and intracranial PFS. Future prospective trials should aim to collect granular information on the extent of extracranial disease to identify drivers of mortality and optimal treatment strategies in patients with brain metastases [1)].

Overall prognosis depends on age, extent and activity of the systemic disease, number of brain metastases and performance status. In about half of the patients, especially those with widespread and uncontrolled systemic malignancy, death is heavily related to extra-neural lesions, and treatment of cerebral disease doesn't significantly improve survival.

In such patients the aim is to improve or stabilize the neurological deficit and maintain quality of life. Corticosteroids and whole brain radiotherapy usually fulfill this purpose. By contrast, patients with a limited number of brain metastases, good performance status and controlled or limited systemic disease may benefit from aggressive treatment as both qualities of life and survival are primarily

related to the treatment of brain lesions.

Strong positive prognostic factors include good functional status, age <65 years, no sites of metastases outside of the central nervous system (CNS), and controlled primary tumor [2], the presence of single metastasis in the brain, long interval from primary diagnosis to brain relapse, and certain cancer subtypes such as HER2-positive brain metastases and EGFR Non-Small cell lung cancer intracranial metastases [3] [4] [5].

Recursive partitioning analysis class

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http://rcalc.ccf.org, under the category “Brain Cancer” [6].

In a study of the Royal North Shore Hospital, on univariate analysis, number of metastases ($P = 0.04$), symptomatic extracranial disease ($P = 0.04$) and early CNS relapse within 6 months ($P < 0.01$) had worse survival. No grade 3-4 toxicity events were noted in 129 patients undergoing RT [7].

It is presently unknown whether patients with brain metastases from heavily pre-treated cancers have a significantly different prognosis than those with less pre-treatment [8].

Recurrence

Intracranial metastases recurrence.

Hyperglycemia

High blood sugar levels (like in diabetes) are linked with shorter survival in people who have cancer that has spread to the brain. Keeping blood sugar in a healthy range is advisable, especially during cancer treatment, though it's not yet proven to change outcomes.

In a retrospective observational cohort study Poudyal et al. [9] aimed to determine if hyperglycemia itself, independent of a diabetes diagnosis, could be a negative prognostic factor in patients undergoing radiotherapy for brain metastases.

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1. Poor Study Design and Underpowered Sample

This is a severely underpowered retrospective analysis with only 62 patients. Dividing such a small cohort into quartiles and running multivariate Cox regressions is statistically irresponsible. The use of arbitrary cut-off points (e.g., >7.8 mmol/L) suggests data dredging rather than hypothesis-driven science.

2. Confounding Bias: Steroids, Disease Burden, and Reverse Causality

The study fails to control for key confounders, most notably **dexamethasone**, a known hyperglycemic agent commonly used in these patients. No data on dosage, duration, or timing are provided. Worse prognosis may reflect more aggressive disease requiring higher steroid doses — making hyperglycemia a *marker*, not a cause, of poor outcome.

3. Misleading Statistics and Weak Significance

The hazard ratios (2.05 and 1.95) have wide confidence intervals and borderline p-values (0.021 and 0.035), which in oncology are hardly compelling. The so-called “trend” in non-diabetics (HR = 2.54, p = 0.099) is not statistically significant, and no correction for multiple comparisons was performed — raising the risk of false positives.

4. Clinical Overreach Without Causality

Despite being a purely observational study, the authors hint at clinical implications. This is dangerous. There is no intervention, no glucose control strategy, and no evidence that modifying glycemia alters outcomes in this population. Such suggestions are speculative and potentially misleading.

5. Redundancy in Literature

It is already well known that diabetes and poor metabolic control are associated with worse outcomes in cancer. This study adds little beyond reinforcing that uncontrolled glucose levels are **associated** with worse prognosis — without clarifying whether this is biologically or clinically relevant.

Conclusion

This paper typifies the overinterpretation of weak retrospective associations. With a small sample, unadjusted confounding, questionable statistical rigor, and inflated conclusions, it falls short of providing actionable evidence. Until prospective, controlled studies are conducted, this finding should remain **hypothesis-generating only**, not practice-changing.

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