

is currently a dearth of meningioma-specific QOL tools in the literature. **OBJECTIVE:** In this systematic review, we analyze the prevailing themes and propose toward building a meningioma-specific QOL assessment tool. **METHODS:** A systematic search was conducted, and only original studies based on adult patients were considered. QOL tools used in the various studies were analyzed for identification of prevailing themes in the qualitative analysis. The quality of the studies was also assessed. **RESULTS:** Sixteen articles met all inclusion criteria. Fifteen different QOL assessment tools assessed social and physical functioning, psychological, and emotional well-being. Patient perceptions and support networks had a major impact on QOL scores. Surgery negatively affected social functioning in younger patients, while radiation therapy had a variable impact. Any intervention appeared to have a greater negative impact on physical functioning compared to observation. **CONCLUSION:** Younger patients with meningiomas appear to be more vulnerable within social and physical functioning domains. All of these findings must be interpreted with great caution due to great clinical heterogeneity, limited generalizability, and risk of bias. For meningioma patients, the ideal QOL questionnaire would present outcomes that can be easily measured, presented, and compared across studies. Existing scales can be the foundation upon which a comprehensive, standard, and simple meningioma-specific survey can be prospectively developed and validated.

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Perceived versus quantified growth trajectory of serially-imaged low-grade gliomas

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Background. Diffuse low-grade gliomas (LGGs) are infiltrative, slow-growing primary brain tumours that remain relatively asymptomatic for long periods of time before transforming into aggressive high-grade gliomas. Surveillance of tumour stability is performed primarily by serial imaging. **Methods.** We retrospectively identified LGG patients that were managed by observation with numerous (≥ 8) serial magnetic resonance imaging (MRI) studies. Tumour volumes were measured by manual segmentation on imaging. Demographic information, tumour histopathological data, and radiological interpretations were collected from electronic medical records. MRI radiology reports of tumour volume stability were classified into "growth" and "no growth" interpretations. **Results.** Of 74 LGG patients, 10 (13.5%) patients were included in the study. A median of 11 MRIs (range, 8-18) over a median of 79.7 months (range, 39.8-113.8 months) were analyzed per patient. Tumour diameter linearly increased at a median rate of 2.17 mm/year. Cox regression analysis showed that initial tumour volume predicted time to clinical intervention, and Mann-Whitney U test found that tumours of patients diagnosed before age 50 grew more slowly. Radiology interpretations that reported "no growth" (n=66) corresponded to a median measured growth of 3.90 mL and 11.0% compared to the comparison scan. Reports of "growth" (n=36) corresponded to median measured volume increases of 9.36 mL and 20.5%. **Conclusion.** We retrospectively analyzed the natural history of LGGs in serially-imaged patients at a single institution. Comparisons to the literature suggest that this is a subset of particularly slow-growing and low-risk tumours. We also highlight

the clinical value of performing accurate LGG volumetric analyses.

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A population-based study of melanoma brain metastasis treatment: Has new progress in systemic therapy and new technology in radiotherapy improved patient outcomes?

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Background: Outcomes for patients with melanoma brain metastases (MBM) have been poor. New radiotherapy technologies and systemic agents have improved outcomes. Outcomes have rarely been studied at the population-level. We undertook a population-based study investigating changes in management and outcome for patients with MBM in Ontario from 2007-2016. **Methods:** This was a retrospective population-based cohort study of patients treated for MBM in Ontario from 2007-2016. Melanoma was identified through the Ontario Cancer Registry. Treatments and outcome were described by era (2007-2009, 2010-2012, 2013-2016). Treatment with cranial radiotherapy and drugs were defined using Cancer Care Ontario data and supplemented by physician billing and drug reimbursement data. Neurosurgery was identified using CIHI hospital records. Time to event was investigated using Kaplan-Meier curves. **Results:** From January 2007-June 2016, 1096 patients with MBM were treated. Whole brain radiation therapy was the first brain-directed treatment in 75.5% of patients in 2007-2009, dropping to 52.0% for 2013-2016. Patients receiving stereotactic radiation or other conformal techniques as the first brain treatment increased from 3.4% in 2007-2009 to 21.3% 2013-2016. Use of BRAF/MEK inhibitors and immunotherapy increased: <2.0% in 2007-2009 to 40.9% 2013-2016. One-year and two-year overall survival (OS) following first brain-directed treatment was greater in 2013-2016: 21.8% at one year and 13.8% after two years (Wilcoxon $p=0.001$). This compared to 12.3% and 6.4% 2007-2009, and 10.7% and 5.5% 2010-2012. **Conclusion:** The advent of new radiation technologies and systemic treatments for MBM was associated with increased survival and greater avoidance of whole brain radiotherapy.

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Is hypofractionation safer than single-fraction radio surgery? The effect of fractionation on radionecrosis

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Introduction: Radiation-induced brain necrosis (RN) is a relatively uncommon (5-20%) but potentially severe adverse effect of stereotactic radiosurgery (SRS) for brain metastasis (BM). We attempted to establish the effect of hypo-fractionation on RN rates by reviewing patients having simultaneous multi-fraction and single fraction treatment of BM at our centre. **Methods:** Patients receiving simultaneous 1 (20-24Gy) or 3 fraction (21-24Gy) SRS treatments were identified in our institution's database. Serial post-SRS MRIs were reviewed to determine the lesion quotient (LQ), or maximum cross sectional area on T1 plus gadolinium divided by