QUALITY OF LIFE

QL-01. HYPERAROUSAL/HYPERVIGILANCE IN PATIENTS WITH BRAIN CANCER CREATES A CYCLE OF SLEEP DISTURBANCE AND DAYTIME SLEEPINESS
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INTRODUCTION: Cancer-related fatigue is the most frequently reported symptom of patients with cancer. The National Cancer Institute describes it as “an extreme tiredness, one that decreases a patient’s ability to function, causing them distress.” The National Comprehensive Cancer Network defines distress as “a continuum, ranging from common normal feelings of vulnerability, sadness, and fear to problems that can become disabling, such as depression, anxiety, chronic fatigue.” Hyperarousal is defined here as a heightened state of psychological and physiological tension, and hypervigilance is a state of excessive wakefulness, watchfulness, and arousal. The loss of control, feelings of helplessness and hopelessness, and the unpredictability of brain cancer propel patients into a psychologically complex state. They fear exposure and embarrassment, secondary to their cognitive injuries, and loss of independence and dignity.

METHODS: A search was conducted that included the databases OVID Medline, OVID Nursing, and the American Psychological Association’s PsychINFO for articles written about cancer symptom clusters, psychological comorbidities related to the diagnosis of brain cancer, and articles about cancer-related fatigue, daytime sleepiness, and insomnia. RESULTS: Some studies supported the theory that the hyperaroused/hypervigilant state is related to the psychological comorbidities of depression, anxiety, and stress associated with being diagnosed with brain cancer disrupts patients’ circadian rhythm and thus prohibits them from getting sufficient restorative sleep. Consequently, patients experience daytime sleepiness, which affects all physical and cognitive function and perpetuates the cycle of the psychological comorbidities and hyperaroused/hypervigilant state. CONCLUSION: I hypothesize that this continuous cycle is one of the major contributing factors to brain cancer-related fatigue and one of the most deleterious interferences with the health-related quality of life of patients with brain cancer.

QL-02. EVALUATING THE IMPACT OF A NEURO-ONCOLOGY NURSE COORDINATOR IN SOUTHWEST SYDNEY
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INTRODUCTION: Neuro-oncology nurse care coordinators (NOCCs) remain rare across Australia, despite recommendations from key national and international bodies that their services be provided. With the recent introduction of a NOCC role in Southwest Sydney (SWS), this study aimed to determine if NOCCs (1) provide support for patient/caregivers throughout their journey and (2) increase efficiency in clinical care delivery. METHODS: All new and existing SWS patients with primary brain tumors (PBTs) were surveyed to ascertain views regarding NOCC function/duties. NOCC key performance indicators included time between referral to NOCC contact, number/completeness of care episodes using Macmillan level interventions (MLIs; 1, least complex, to 5, most complex), and psychosocial screenings/referrals initiated. RESULTS: Of 159 NOCC caseloads (N = 85% completed), 85% completed the assessment at baseline. EORTC QLQ-C30/BN20 scores at baseline were associated with OS and PFS. PS delta in the MDASI-BT and EORTC QLQ-C30/BN20 was associated with OS and PFS. The MDASI-BT and EORTC QLQ-C30/BN20 revealed symptomatic differences between arms (dd vs. sd) in the MDASI-BT and EORTC QLQ-C30/BN20. CONCLUSION: Longitudinal collection of PRO measures is feasible and provides complementary information to standard outcome measures in clinical trials. In this trial, QOL symptom items at baseline were prognostic for OS and PFS and may impact stratification; early changes in symptoms were associated with OS and PFS and may help to predict response or progression; and symptom and QOL changes demonstrated sensitivity to adverse treatment effects (dd > sd) and may help in risk/benefit analyses. Support: NCI U10CA 21661, U10CA37422, ABC, and Merck Pharmaceuticals.

QL-03. CLINICAL UTILITY OF QUALITY OF LIFE (QOL) AND SYMPTOM ASSESSMENT AS PROGNOSTIC FACTORS FOR SURVIVAL AND MEASURES OF TREATMENT EFFECTS ON RTOG 0525
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BACKGROUND: RTOG 0525, a randomized phase II/III study, compared dose-dense (dd) versus standard-dose (sd) temozolomide in patients with newly diagnosed glioblastoma. We used patient-reported outcome (PRO) measures of symptoms and quality of life (QOL) to examine the clinical benefit and toxicity of therapy. The prognostic value of PRO measures for survival outcomes and the differential impact of therapy are reported here.

METHODS: Validated symptom assessment (MD Anderson Symptom Inventory-Brain Tumor Module [MDASI-BT]) and QOL questionnaires (EORTC QLQ-C30/BN20) were completed in a subset of patients at baseline and longitudinally during the study. Univariate and multivariate Cox proportional hazard regression modeling was used to determine the prognostic value of a priori selected assessments at baseline and early change from baseline to cycle 1 (C1delta) for overall survival (OS) and progression-free survival (PFS). Two-sample proportional test statistics were used to evaluate differences between treatments (dd vs. sd) in symptomatic worsening from baseline to cycle 4 (C4delta) in patients without disease progression. RESULTS: Of 182 randomized patients (246 consented), > 85% completed the assessment at baseline. EORTC QLQ-C30/BN20 scores at baseline were associated with OS and PFS. C1delta in the MDASI-BT and EORTC QLQ-C30/BN20 was associated with OS and PFS. The MDASI-BT and EORTC QLQ-C30/BN20 revealed symptomatic differences between arms (dd > sd) in C4delta. Composite benefit of both measures was assessed and reported. CONCLUSIONS: Longitudinal collection of PRO measures is feasible and provides complementary information to standard outcome measures in clinical trials. In this trial, QOL symptom items at baseline were prognostic for OS and PFS and may impact stratification; early changes in symptoms were associated with OS and PFS and may help to predict response or progression; and symptom and QOL changes demonstrated sensitivity to adverse treatment effects (dd > sd) and may help in risk/benefit analyses. Support: NCI U10CA 21661, U10CA37422, ABC, and Merck Pharmaceuticals.

QL-04. COPING STRATEGIES AMONG FAMILY CAREGIVERS OF PATIENTS WITH BRAIN TUMORS IN BRAZIL
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INTRODUCTION: Brain tumors have cognitive, physical, and psychological impacts that impact the quality of life of the entire family. A conceptual model theorizes that caregivers’ appraisal of internal and external resources relative to the demands of caregiving leads to their stress response. Literature about caregivers’ coping is particularly limited in lower income countries, where fewer resources may be available. This study explored the coping strategies employed by caregivers of patients with brain tumors in Brazil.

METHODS: Seventeen caregivers of patients with primary malignant brain tumor were recruited from large urban hospitals in Brazil. Semi-structured interviews of 30-60 minutes were conducted. Topics
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Abstracts

inclusion of caregivers, challenges faced, sources of support, and caregiver response. A questionnaire was also administered. It contained items on demographic and treatment characteristics and used validated instruments to assess coping, including the Brief COPE Inventory (a 28-item measure of coping responses for 14 scales) and the Hope Herth Index (a 12-item instrument for measuring hope). Descriptive analysis was used for quantitative data. Qualitative data were analyzed for common emerging themes. Research nurses and four medical assistant background participants. The top three coping responses as measured by Brief COPE were religion, positive reframing, and acceptance. A major theme was the role of faith/spirituality in helping caregivers face their situation. Respondents also described finding strength from within and from their love for the patient. Another theme involved setting boundaries, whether in monitoring what was disclosed to the patient or to acquaintances, attempting to participate in normal activities when possible; or letting go of things that were out of their control. Also, respondents relied on physical indicators of spiritual needs and subsequent referral for psychological or pharmacological treatment. Conclusions: Caregivers’ internal resources are the most important coping mechanisms for caregivers facing limited external resources. Interventions should acknowledge the role of religion and acceptance.

QL-05. SUSTAINED QUALITY OF LIFE IN A PATIENT WITH LEPTOMENIGEAL LYMPHOMA TREATED WITH QUARTERLY INTRATHECAL RITUXIMAB

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CASE REPORT AND REVIEW OF THE LITERATURE: A 66-year-old woman developed a left supramandibular neck mass, and biopsy revealed diffuse large B-cell lymphoma. Staging at presentation with positron emission tomography showed adenopathy in the lungs, abdomen, and pelvis consistent with stage IV B-cell lymphoma. She was treated with 8 cycles of CHOP plus rituximab, and she was well for 2 years. She then began to develop recurrent episodes of right-sided weakness, fatigue, weight loss, and tinnitus with hearing loss, which were considered to be classic clinical indicators of leptomeningeal metastases (LMM). Imaging studies showed no leptomeningeal enhancement, but initial spinal tap showed a depressed glucose level of 20 and an elevated protein level of 106 but persistently negative cytology. Standard treatment with intrathecal methotrexate and intrathecal liposomal ara-C produced severe nausea and vomiting despite maximal use of antiemetic therapy. She developed significant gait ataxia from myelopathy and required the use of a cane. Though her spinal fluid had cleared to 0 cells, her cytology remained persistently positive. She was changed to 25 mg of intrathecal rituximab 2 years ago and is now treated every quarter with the goal of maximizing her quality of life rather than negative cytology. DISCUSSION: Over the past few years, there has been increasing interest in the use of the anti-CD20 antibody rituximab for leptomeningeal lymphoma. The best tolerated dose has proven to be 25 mg, and at least one phase I trial has found it feasible and effective. We are struck by her dramatic response, which has lasted over 29 months. Both agents were designed to keep her cerebrospinal fluid white count low despite persistently positive cytology. Repeat staging showed no other site of disease. The neurotoxic side effects of intrathecal methotrexate and ara-C need to be carefully considered for patients with LMM now that alternative treatment strategies are available.

QL-06. POSTSURGICAL HEALTH-RELATED QUALITY OF LIFE AND MOOD IN PATIENTS WITH SPINAL MENINGIOMA

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INTRODUCTION: Despite the potentially extended survival period of patients with low-grade glioma (LGG), they are underrepresented in the growing literature on the health-related quality of life (HRQOL) of cancer survivors. The aim of this study was to investigate the generic and condition-specific HRQOL of patients with LGG. METHODS: We compared 195 patients with LGG, diagnosed on average 5.6 years earlier, to 100 patients with hematologic cancers (non-Hodgkin’s lymphoma and chronic lymphatic leukemia; NHL/CLL) and 205 general population controls, matched for age, sex, and education level (healthy controls). Generic HRQOL was assessed with the SF-36 Health Survey; condition-specific HRQOL was assessed with the Medical Outcomes Study Cognitive Function Questionnaire and the EORTC Brain Cancer Module. Objective neurocognitive functioning was assessed with a standardized battery of neuropsychological tests. RESULTS: No statistically significant differences were observed between the SF-36 scores of patients with LGG and NHL/CLL. Patients with LGG had significantly lower scores on the EORTC Brain Cancer Module and on the mental health component of the SF-36. Approximately one-quarter of the patients with LGG reported serious neurocognitive symptoms. Female sex, epilepsy burden, and the number of objectively assessed neurocognitive deficits were significantly associated with both generic and condition-specific HRQOL. Clinical variables, including time since diagnosis, tumor lateralization, extent of surgery, and radiotherapy, did not show a consistent relationship with HRQOL. CONCLUSION: Patients with LGG experience significant problems across a broad range of HRQOL domains, many of which are not condition-specific. However, the neurocognitive deficits and epilepsy that are relatively prevalent among these patients are associated with negative HRQOL outcomes and thus contribute additionally to the vulnerability of this population of cancer patients.

QL-07. COMPROMISED HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH LOW-GRADE GLIOMA

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INTRODUCTION: Treatment of spinal meningiomas is generally associated with low tumor recurrence and mortality and postsurgical improvement, and tinnitus with hearing loss, which were considered to be classic clinical indicators of leptomeningeal metastases (LMM). Imaging studies showed no leptomeningeal enhancement, but initial spinal tap showed a depressed glucose level of 20 and an elevated protein level of 106 but persistently negative cytology. Standard treatment with intrathecal methotrexate and intrathecal liposomal ara-C produced severe nausea and vomiting despite maximal use of antiemetic therapy. She developed significant gait ataxia from myelopathy and required the use of a cane. Though her spinal fluid had cleared to 0 cells, her cytology remained persistently positive. She was changed to 25 mg of intrathecal rituximab 2 years ago and is now treated every quarter with the goal of maximizing her quality of life rather than negative cytology. DISCUSSION: Over the past few years, there has been increasing interest in the use of the anti-CD20 antibody rituximab for leptomeningeal lymphoma. The best tolerated dose has proven to be 25 mg, and at least one phase I trial has found it feasible and effective. We are struck by her dramatic response, which has lasted over 29 months. Both agents were designed to keep her cerebrospinal fluid white count low despite persistently positive cytology. Repeat staging showed no other site of disease. The neurotoxic side effects of intrathecal methotrexate and ara-C need to be carefully considered for patients with LMM now that alternative treatment strategies are available.

QL-08. SPONTANEOUS SPEECH IN PATIENTS WITH PRESUMED LOW-GRADE GLIOMAS IN ELOQUENT AREAS BEFORE AND AFTER AWAKE CRANIO TOMY

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Patients with low grade gliomas (LGGs) often complain preoperatively about their conversation problems. However, subjective (but not objective) naming performance could be a precursor for postoperative aphasias. Consequently, standardized language tests do not always capture these conversational problems. Detailed linguistic analyses of spontaneous speech should provide more insight into the communicative problems of patients with LGG; no previous studies have been designed.
to investigate spontaneous speech before and after surgery in patients with LGG in eloquent areas to select sensitive parameters. The study included 27 patients and 21 healthy controls. Spontaneous speech samples were collected before and after awake craniotomy. Within a 300-word sample, spontaneous speech was analyzed in terms of lexical diversity (type-token ratio), mean length of utterance (MLU), repetitions, self-corrections, and incomplete sentences. Statistical analyses revealed that postoperatively, patients had more incorrect selections of words (self-corrections), and time-gaining between the content words (repetitions) was associated with a word-finding deficit. Omitted parts of speech could point to syntactic difficulties. An analysis of spontaneous speech appeared to be a sensitive tool for detecting language problems. These findings can be used to better prepare patients for postoperative language deterioration and to further improve the test-protocol.

QL-09. ONE-YEAR SYMPTOM TRAJECTORY IN PATIENTS WITH PRIMARY BRAIN TUMORS
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BACKGROUND: Patients with primary brain tumors (PBTs) experience symptoms at diagnosis and throughout the illness course seriously impacting their quality of life and physical and psychological function. Few longitudinal studies have described this symptom trajectory. METHODS: Adult patients with PBT completed the MD Anderson Symptom Inventory-Brain Tumor Module (MDASI-BT) at baseline and every 4 months (A-D) over the course of a year. The MDASI-BT includes 22 symptom items and 6 interference items and can be further divided into 6 symptom factors. Descriptive statistics were used to describe patients’ characteristics, and t-tests and McNemar tests were used to examine changes in means and proportions of symptoms over time. RESULTS: The 66 patients were mostly white (80%), and male (54%) with a variety of brain tumors, most commonly glioblastomas were most common (58%). Over half the patients (53% to 69%) had moderate-severe difficulty concentrating at B reported it as non-mild at C. The results indicate that patients with PBT may experience mood disturbance fluctuates during the first year after surgery for PBT, even in patients with stable disease. A significant change in severity was seen 3-9 months following treatment. Further studies exploring the pattern and potential biologic mechanisms of this symptom pattern may lead to appropriate interventions to improve patients’ quality of life.

QL-10. PROGNOSTIC IMPORTANCE OF QUALITY OF LIFE AND FATIGUE IN PATIENTS WITH HIGH-GRADE GLIOMA
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Quality of life (QoL) impairment and fatigue are frequently experienced during the treatment trajectory for recurrent high-grade glioma (HGG). Fatigue and QoL impairments are likely multifactorial in recurrent HGG, with etiologies ranging from neurological dysfunction and chemotherapy to depression and the use of other medications (e.g., corticosteroids, antiepileptics). We sought to understand how QoL and fatigue impact survival in patients with recurrent HGG. In a prospective study, 243 patients with World Health Organization (WHO) grade III/IV recurrent HGG and Karnofsky Performance Status (KPS) ≥ 70 completed self-administered questionnaires that evaluated QoL and fatigue. QoL was assessed with Functional Assessment of Cancer Therapy-General (FACT-G) and Functional Assessment of Chronic Illness Therapy (FACT-C) scales, and fatigue was assessed with the fatigue subscale of the Functional Assessment of Chronic Illness Therapy (FACT-F). Cox proportional hazard models were utilized to evaluate the effect of subjective QoL and fatigue on survival. The median time to death was 24 months. Of 243 patients, 76 (31%) had KPS ≥ 70, 137 (56%) had KPS 60-69, and 20 (8%) had KPS < 60. Among these patients, 167 (69%) had recurrent WHO grade IV gliomas, 167 (69%) had recurrent WHO grade III gliomas, and 167 (69%) had recurrent WHO grade II gliomas. KPS ranged from 70 to 100, and 88 (36%) patients had KPS < 90. In univariate Cox analyses, the FACT-C specific subscale (hazard ratio [HR] = 0.87; 95% confidence interval [CI] 0.55-0.95), and FACT-F subscale (HR = 0.981; 95% CI, 0.963-1) were both significant predictors of survival. Fatigue added prognostic information beyond that provided by KPS, age, sex, tumor grade, and number of prior progressions (p = 0.036). FACT-G and FACT-Br were not independent predictors of prognostic value. Based on these findings, fatigue is a strong independent predictor of survival that provides incremental prognostic value to the traditional markers of recurrence in recurrent HGG. Strategies to treat fatigue, whether pharmacological or nonpharmacological, warrant further investigation.

QL-11. MOOD DISTURBANCE IN PATIENTS WITH PRIMARY BRAIN TUMORS
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BACKGROUND: Mood disturbance in patients with primary brain tumors (PBTs) can impact overall quality of life during the course of the illness. Research on mood states throughout the illness trajectory in this patient population is limited; thus, opportunities to help improve patient distress are also limited. METHODS: Adult patients with PBT were eligible to participate. Data collection tools included a patient-completed demographic data sheet, an investigator-completed clinician checklist, and the Profile of Mood States-Short Form (POMS-SF), a 37-item assessment of moods within 6 subscales (depression, vigor, anger, tension, confusion, and fatigue) on a 0-4 scale that was used to evaluate patients’ mood disturbance. RESULTS: A total of 168 patients (mean age, 43.5 years; range 19-79) completed the POMS-SF. Participants were primarily white (80%) and male (54%) with a variety of brain tumors, most commonly glioblastoma (41%). Patient groups included those with newly diagnosed disease (19%); those undergoing treatment (visit with magnetic resonance imaging [MRI], 35%; without MRI, 10%); and those in follow-up with MRI but without active treatment (38%). Scores on the POMS-SF and its subscales were not significantly different among the four groups except for fatigue (p < 0.05) and depression (p < 0.05), which indicates that patients had mood disturbance at various points in the illness trajectory. Patients undergoing treatment without MRI felt more depressed (p < 0.05) and fatigue (p < 0.05) than patients in follow-up. There was a strong trend for newly diagnosed patients to report more total mood disturbance, tension, and confusion and less vigor when compared to the other groups. CONCLUSION: The results indicate that patients with PBT may experience mood disturbance throughout the illness trajectory, with fluctuations in mood depending on the current stage of their illness. In addition, assessment of patients at times other than disease evaluation may be important.

QL-12. LOST TIME IN THE OPERATING ROOM: THE PRECIOUS COMMODITY THAT CAN NEVER BE RECOVERED
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INTRODUCTION: Lost time in the operating room (OR) is significant. This has not properly been scientifically explored and reported in the literature. Time in the OR is crucial for the patient, surgical team, and the utilization of institutional resources. Critical time is regularly wasted. This study demonstrates the amount of time wasted on average during neurological procedures. Causes of lost operating time were explored and potential costs were contemplated, including increased patient exposure to perioperative dangers, financial drain to institutions, and the apparent loss of cohesiveness in the operating team. The significance of these findings cannot be understated. These costs are significant and in many cases avoidable. With proper organizational effort, this potential cause of morbidity can be limited. Not only will patients be less exposed to morbidities, but the health system can be partially relieved of its structural ailments, thereby allowing resources to be better utilized. MATERIALS AND
METHODS: A prospective observational study of 100 neurosurgical cases was performed at The Ohio State University. Time was observed from patients' entrance into the OR to their exit from the OR. All types of neurosurgical procedures were included; delays were recorded. Delays were considered as any preventable interruption of the smooth flow of the procedure. RESULTS: Causes of delay were divided into two basic categories: equipment-related and staff-related. Equipment-related delays were nonfunctioning or malfunctioning equipment that needed adjustment, replacement, or sterilization. Staff-related delays were those related to waiting for appropriate staff members to enter the OR. DISCUSSION: We described the cost of delay in the OR financially and estimated the cost of delay based on current hourly cost. We explored the time in which delays can be limited and highlighted further possible studies. CONCLUSION: Delays in the OR are common and preventable. The costs are significant and cannot be understated.

QL-13. RELIABILITY AND VALIDITY OF THE MUIS-BRAIN TUMOR FORM (MUIS-BT)
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INTRODUCTION: The Mishel Uncertainty in Illness Scale (MUIS) has been used extensively with other solid tumors throughout the continuum of care. Importantly, few reports are available regarding its use in patients with primary brain tumors (PBTs). The MUIS-BT is a validated tool that can be used to assess uncertainty in patients with PBTs. The goal of this study was to test the reliability and validity of the MUIS-BT.

METHODS: A total of 168 patients with PBT were recruited. Recruitment is still ongoing and is expected to be completed by the end of 2022. Quality of life (QL-14), symptom distress (MDASI-BT), and uncertainty (MUIS-BT) were completed demographic data sheet, an investigator-completed clinician checklist, and the Profile of Mood States-Short Form (POMS-SF). To date, 14 parents and 13 children have been recruited. Recruitment is still ongoing and is expected to be completed by the end of 2022. Quality of life (QL-14), symptom distress (MDASI-BT), and uncertainty (MUIS-BT) were completed.

RESULTS: Six of 33 items in the original MUIS were modified to better describe the uncertainty of patients with PBT, and content validity was established by a review by the panel of experts. Then, 168 patients participated in the second stage of the study. Participants were primarily white (80%) and male (54%) with a diagnosis of glioblastoma (41%). Of the 168 patients, 31 had newly diagnosed PBT, 74 were receiving treatment, and 63 were in follow-up without active treatment. Cognitive debriefing of the MUIS-BT showed the instrument was clear, concise, and easily understood by patients. The construct validity of the MUIS-BT was demonstrated by its correlations with mood states measured by POMS-SF (p < .01), symptom severity measured by MDASI-BT (p < .01), and symptom interference measured by MDASI-BT (p < .01). Internal consistency was .94. CONCLUSION: The 33-item MUIS-BT demonstrated validity and reliability in patients with PBT. A reliable and valid instrument to measure uncertainty and significant correlation with symptom distress and mood states may help manage patients' uncertainty, which in turn could result in better treatment outcomes and quality of life.

QL-15. THE PEDIATRIC EPENDYMOMA OUTCOMES STUDY
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Ependymomas are rare central nervous system tumors in children, and concerns about managing patients who have been treated for ependymoma at presentation, and impact on patients and families. The Collaborative Ependymoma Research Network is a multi-institutional effort that is focused on better defining the disease and improving treatment for all patients with ependymoma, with the aim of improving health-related quality of life of patients and families. The Pediatric Ependymoma Outcomes Study is an online survey designed as one of the first steps toward reaching this goal. The primary objectives are to obtain data regarding treatment, symptoms, functional status, and quality of life reported by patients and their parents and to evaluate the relationship between health status and disease and treatment characteristics. Broad inclusion criteria are used in an attempt to draw a more thorough picture of children with ependymoma and include children aged 7-17, parents of children ages 0-17, and parents of deceased children. In addition to providing demographic, disease, and treatment information, both parents and patients ages 7-17 are asked to complete the pediatric Functional Assessment of Chronic Therapy-Fatigue (pedsFACT-F), pedsFACT-Childhood Brain Tumor Survivors, Perceived Cognitive Function Item Bank Short-Form, and pediatric Functional Assessment of Anorexia/Cachexia Therapy. Parents of patients ages 0-6 are asked to complete the symptom severity scale and Impact of Event Scale. To date, 14 parents and 13 children have been recruited. Recruitment is still ongoing and is expected to be completed by the end of 2022. Upon completion, we will have a better understanding of how ependymoma and its treatment may impact patients and their families, and appropriate interventions can then be implemented in a timely manner.

QL-16. RELATIONSHIP BETWEEN MOOD DISTURBANCE AND CONCOMITANT MEDICATION USE IN PATIENTS WITH PRIMARY BRAIN TUMORS
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BACKGROUND: Patients with primary brain tumors (PBTs) experience psychological distress in several ways during the disease trajectory. Medications can have an important impact on patients’ mood during this time. Limited research exists on the association between certain medications and mood disturbance; therefore, opportunities to improve quality of life in this patient population are limited. METHODS: Adult patients with PBT were eligible for participation. Data collection tools included a patient-completed demographic data sheet, an investigator-completed clinician checklist, and points in the Profile of Mood States-Short Form (POMS-SF), a 37-item assessment of moods within 6 subscales (depression, vigor, anger, tension, confusion, and fatigue) on a 0-4 scale that was used to evaluate patients' mood disturbance. Relationships between mood, concurrent medication use, and demographic characteristics were examined. RESULTS: A total of 168 patients (mean age 43.5 years, range 19-79) completed the POMS-SF. Participants were primarily white (80%) and male (54%) with a variety of brain tumors, most commonly glioblastoma (41%). Current medications included anticonvulsants (70%), corticosteroids (16%), and antidepressants (16%). Participants receiving anticonvulsants reportedly...
had more total mood disturbance (m = 19.72) and less vigor (m = 3.73) than those not taking corticosteroids, who scored higher on the vigor subscale (m = 11.26). Participants receiving antiinflammatories had higher total mood disturbance (m = 14.23) and higher subscales, with the exception of vigor (m = 10.48), than those not receiving antiinflammatories, who scored less than half on total mood disturbance (m = 7.62). Participants receiving antidepressants showed high total mood disturbance scores. No serious adverse events were reported by participants not taking antidepressants and had slightly higher scores on the confusion, tension, and fatigue subscales. CONCLUSION: The results indicate the importance of concurrent medication use and the affect it may have on mood disturbance during the illness trajectory. Further studies are needed to focus on this relationship to implement helpful interventions for managing mood disturbance and improving overall well-being.

QL-17. INCONGRUITY ON QUALITY OF LIFE SCORES BETWEEN PATIENTS WITH MALIGNANT GLIOMAS AND CAREGIVERS: UPDATED DATA
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The accuracy of quality of life (QOL) scores in patients with malignant gliomas has not been well studied. Accuracy may be limited by minimizing or ignoring symptoms, particularly in the presence of physicians. The purpose of this study was to assess the divergence of reported QOL in patients and caregivers to gain a better understanding of this potential issue. METHODS: Patients with malignant gliomas within 6 months of diagnosis or relapse were eligible for this study if they had an involved caregiver. The Functional Assessment of Cancer Therapy-Brain (FACT-B) was given to patients and caregivers at baseline and on the days that magnetic resonance imaging was performed (approximately every 2 months) for tumor assessment and continued until tumor progression. Patients completed the FACT-Br, and their caregivers were asked to complete the same questionnaire as they perceived the patient would respond. RESULTS: We collected 194 FACT-Br scales from the 50 patient-caregiver pairs. Patients reported their overall QOL to be better than perceived by caregivers by an average of 4.66 points on the 200-point scale (p < .01). Significant differences were found in all the subscales: physical (p < .01), social (p < .03), emotional (p = .01), and functional (p < .01) well-being. CONCLUSIONS: Patients consistently report their QOL to be more favorable than perceived by their caregivers in all subscales of the FACT-Br. This discrepancy can be attributed to either the patients minimizing their symptoms or to caregivers overreading the patients’ symptoms. We suspect the former; hence, including caregivers in clinical assessments is needed to better understand patients’ QOL and functional status.

QL-18. INTERIM ANALYSIS OF A RANDOMIZED PLACEBO-CONTROLLED PILOT TRIAL OF ARMODAFINIL FOR FATIGUE IN PATIENTS WITH MALIGNANT GLIOMAS UNDERGOING RADIOTHERAPY WITH OR WITHOUT STANDARD CHEMOTHERAPY
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In this phase 2 trial of armodafinil for fatigue in patients undergoing radiation therapy, we report interim data. Armodafinil was associated with a trend toward reduced fatigue as defined by an improvement of less than 10% over the placebo arm in all of the fatigue-rating scales. RESULTS: At the time of the protocol-specified cutoff time, a total of 41 of 70 intended participants have been randomly assigned to 150 mg of armodafinil or to placebo. Data from 23 patients (n = 14 treatment arm; n = 9 placebo arm) were available for the interim analysis. The test statistic fell on all of the predefined QOL-18, QOL-17, and QOL-20 subscales. The change in median FACT-F-scores between day 1 and day 42 was -3 (SD 26) in the placebo group and +2 (SD 16) in the armodafinil group (p = 0.05, Wilcoxon signed rank test; patients with missing data were excluded). There were no serious adverse events. CONCLUSIONS: Treatment with armodafinil is well tolerated in patients with gliomas undergoing radiotherapy. The trend toward clinically meaningful reduction of fatigue in the armodafinil group is approaching statistical significance. The trial has not met predefined stopping criteria, and accrual will continue. Updated results will be presented.
Alternatives for cases in which the patient cannot drive. These brochures have been successful in New South Wales and can be adapted to individual countries and regions.

QL-21. VALIDATION OF A GRADING SYSTEM FOR MALIGNANT EPIDURAL SPINAL CORD COMPRESSION
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We have previously demonstrated radiosurgical decompression of malignant epidural spinal cord compression (MSECC) and neurological improvement. Open surgical resection and radiation are widely accepted as treatment of MSECC. To facilitate treatment decision making, we developed a grading system for MSECC. The proposed grading system has radiographic and neurological components. Radiographic grades are 0-IV: 0 is spine bone involvement only; I is epidural tumor within epidural fat; II is thecal sac compression; III is impingement to cord; IV is cord displacement and partial cerebrospinal fluid blockage; and V is complete blockage. Neurological grades are a-e: a is no symptoms; b is focal minor symptoms; c is functional paresis with muscle strength of 4/5; d is nonfunctional paresis with muscle strength <3/5; and e is plegia or incontinence. This study was performed to validate the grading system. Magnetic resonance imaging of 62 patients with 85 lesions who were treated in a phase II trial of spinal radiosurgery was retrospectively reviewed by three clinicians (radiation oncologist, medical oncologist, and neurosurgeon) and five neuroradiologists. To test inter-observer variation, Kendall’s coefficient was calculated for concordance for ordinal response. Kappa coefficient was calculated for nominal response. Radiographic grade did not correlate with neurologic status. After radiosurgery, neurological grade a-e: MSECC improved or remained intact in 82% of patients. Neurological progression was seen in nine (18%) patients. Overall Kendall’s coefficient of concordance for ordinal response was 0.83 (p < .0001). Overall, kappa coefficient for nominal response was 0.38 ± 0.01 (p < .0001). This represents good to fair correlation. Among clinicians, Kendall’s coefficient was 0.85 (p < .0001), and kappa coefficient was 0.33 ± 0.04 (p < .0001). Among neuroradiologists, Kendall’s coefficient was 0.86 (p < .0001), and kappa coefficient was 0.39 ± 0.01 (p < .0001). Inter-observer variation was minimal, and there was high correlation between clinicians and radiologists. These findings support the usefulness of the grading system for clinical patient evaluation and outcome reporting.

QL-22. EXPLORATION OF SYMPTOM CLUSTERS IN PATIENTS WITH PRIMARY AND METASTATIC BRAIN CANCER
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INTRODUCTION: Patients with primary brain tumors (PBTs) and metastatic brain tumors (METs) often experience symptoms related to tumor growth or its treatment. Symptom clusters describe three or more concurrent symptoms. The objectives of this study were to characterize the prevalence and severity of symptoms, identify the number and types of symptom clusters, and evaluate the differences in symptom clusters between patients with PBTs and METs. METHOD: Prospectively acquired data on the severity and interference of symptoms as reported on the MD Anderson Symptom Inventory Brain Tumor Module (MDASI-BT) were combined from two previously conducted clinical trials and analyzed to identify symptom clusters. A sample of 413 patients (291 with PBTs and 124 with METs) was included in the analyses. Exploratory factor analysis with equamax rotation was used to search for symptom clusters. Differences in symptom clusters between the PBT and MET groups were examined using independent sample t-tests. RESULTS: The mean age of patients was 49 years (range 18-81), and 36% were female. Symptom severity (rated on a 4-point scale: 0 = none to 4 = severe) was more severe in the MET group, whereas difficulty remembering, speaking, and concentrating was more severe in the PBT group (p < 0.001). Factor analysis of the MDASI-BT items revealed five symptom clusters. One cluster, weighted strongly on cognitive symptoms (difficulty remembering, difficulty understanding, difficulty speaking, and difficulty concentrating), was more severe in the PBT group and differed significantly between the PBT and MET groups (p = 0.001). A second cluster that differed between the PBT and MET groups (p = 0.015) was weighted strongly on gastrointestinal symptoms (nausea, decreased appetite, and vomiting) and was more severe in the MET group. CONCLUSION: Although both are intracranial disease processes, symptom profiles demonstrated greater cognitive severity in PBTs. Further delineation of treatment details is needed to better understand this finding.

QL-23. WOUND COMPLICATIONS IN RECURRENT GLIOMA SURGERY
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A retrospective study was conducted to assess the rate of wound, cerebrospinal fluid (CSF), and hematoma complications in recurrent intracranial glioma surgery. We included 131 adult patients. Of the 131 patients, 90 men and 41 women, 16% with recurrent glioma who underwent surgery between 1995 and 2010. Patients must have had at least one resection as either the initial or subsequent intervention, and at least one intervention must have taken place at our institution. The first intervention was resection in 97 patients and biopsy in 34 patients. Complications were defined as those requiring reoperation and included wound-related, CSF-related, and hematoma-related complications. Of the 131 patients, 16% had complications at some point after the second or subsequent intervention. In those 21 patients, there were 34 complications. Of the complications, 50% were wound-related, 29.4% were CSF-related, and 20.6% were hematoma-related. Complications occurred only after resection and not after biopsy. Complications were reported in 13.6% of men and 20.9% of women. When individual rates of complication were evaluated, there was a 9.9% chance of complication(s) after the second intervention (OR = 2.30) in patients who underwent two interventions. In patients who underwent three interventions, there was a 13.7% chance of complication(s) after the third intervention (OR = 3.31). In patients who underwent four or more interventions, there was a 22.2% chance of complication(s) after the fourth or subsequent intervention (OR = 5.95). When cumulative rates of complication were evaluated, 13.7% of patients who underwent at least two interventions had complication(s) after the first or second intervention. Of patients who underwent at least three interventions, 23.5% had complication(s) after the first, second, or third intervention. Of patients who underwent at least four interventions, 35.6% had complication(s) after the first, second, third, fourth, or subsequent intervention. Of the patients who had complication(s), 76.2% developed complication(s) after radiotherapy. Neurosurgical biopsy and/or resection of recurrent glioma remains a viable option, but with each intervention, the risk of local surgical complication increases. This study identifies rates of surgical complications in neurosurgical treatment of recurrent glioma.