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QOLP-24. ATTITUDES TOWARD FERTILITY AND FERTILITY PRESERVATION IN WOMEN WITH GLIOMA

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compared to standard TMZ therapy as first-line treatment of O6-methylguanine-DNA methyltransferase (MGMT)-promotor hypermethylated glioblastoma. Quality of life (QoL) assessment was a secondary objective to investigate if CCNU/TMZ combination chemotherapy has a detrimental effect on patient's QoL. **PATIENTS AND METHODS:** Patients (n=141) received standard radiotherapy and were randomized (1:1) for CCNU/TMZ or standard TMZ. The modified intention-to-treat population consisting of 129 patients was analyzed. At least every three months, Karnofsky performance score (KPS) was determined and QoL was measured using the EORTC-QLQ C30 and BN20 questionnaires. A longitudinal mixed-model analysis was used to evaluate differences between treatment arms in the course of KPS and QoL over time. Time to first deterioration was analyzed using a Cox regression model. **RESULTS:** Over a period of four years, longitudinal mixed-model analysis detected no significant impairment of QoL or KPS in the CCNU/TMZ arm as compared to the TMZ arm. Time to deterioration was prolonged in one QoL domain, motor dysfunction, for patients in the experimental arm. **CONCLUSION:** Intensified alkylating chemotherapy with CCNU/TMZ for patients with MGMT promotor-methylated glioblastoma did not lead to a reduction of QoL or KPS compared to TMZ standard therapy.

QOLP-21. THE RELATIONSHIP BETWEEN CAREGIVING BURDEN AND ANXIETY SYMPTOMS IN CAREGIVERS OF PATIENTS WITH MALIGNANT GLIOMAS

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BACKGROUND: Patients with malignant gliomas have a poor prognosis and high symptom burden. Caregivers of these patients face significant challenges due to the impact of the cancer on their loved ones neurological and mental faculties. We have previously shown that rates of clinically significant anxiety symptoms in caregivers of this population are high (50%). We sought to evaluate whether caregiving burden was associated with anxiety symptoms in caregivers of patients with malignant gliomas. **METHODS:** We conducted a prospective study in patients with newly diagnosed malignant gliomas and their caregivers, collecting caregivers self-report data within 6 weeks of diagnosis. We assessed caregivers anxiety symptoms with the Hospital Anxiety and Depression Scale, with subscale scores >7 considered clinically significant. We evaluated caregiving burden using the Caregiver Reaction Assessment (CRA) subscales, with the following domains: impact on schedule, caregivers esteem, lack of family support, impact on health, and impact on finances. We used a linear regression model to identify associations between the CRA subscales and anxiety symptoms. **RESULTS:** Fifty percent (38/76) of caregivers experienced clinically significant anxiety symptoms. Caregiving burden was significantly associated with anxiety symptoms $F(5, 69)=11.525, p<0.001, R^2=0.455$. Impact on schedule ($B=2.273, p<0.001$), impact on health ($B=2.177, p=0.011$), and impact on finances ($B=1.374, p=0.002$) added significantly to the model. **CONCLUSIONS:** Half of caregivers of patients with malignant gliomas experience clinically significant anxiety symptoms within 6 weeks of the patients diagnosis. Caregiving burden accounted for a substantial proportion (45.5%) of the variance in anxiety symptoms, with impact on the caregivers schedule, health, and finances demonstrating significant relationships with anxiety. These results suggest that caregivers who report a greater caregiving burden that impacts their schedule, health, and finances are also at risk for heightened anxiety symptoms. Interventions to reduce caregiving burden and decrease caregiver anxiety are needed.

QOLP-22. THE INTERNATIONAL LOW GRADE GLIOMA REGISTRY: PATIENT-REPORTED QUALITY OF LIFE

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The overarching goal of the International Low Grade Glioma (LGG) Registry is to allow for focused study of LGG (defined as adult grade II astrocytoma, mixed glioma, or oligodendroglioma), including quality of life (QOL). To date, enrollment is completed for 234 patients from 21 states and nine countries (US, France, United Kingdom, Canada, Australia, Hong Kong, New Zealand, Belarus and Spain). Pilot data on QOL (MOS SF-36 scale, measured from 0–100 with higher scores suggesting better QOL) are available for 112 LGG patients for whom we have confirmed treatment via medical record review. Enrolled LGG patients were predominantly White (91.2%), female (56.3%), generally otherwise healthy with only 5% reporting a co-morbid condition) and had a mean age of 36.9 years. A wide range of symptoms were reported by patients: 23.4% reported being unable to drive, 32.4% reported trouble thinking, and 35.1% reported difficulty with getting words out. To date, fifty-two percent of patients have received radiation (XRT): patients not treated with XRT at diagnosis report significantly

better physical functioning than do those who received XRT, with persons receiving XRT at time of diagnosis reporting the lowest scores ($p=0.003$). Interestingly, patients not treated with XRT reported lower emotional and mental health scores than did those receiving XRT ($p=0.02$). Interpretation of these findings is limited at this point given the small sample and possible selection bias; possibilities include that the no XRT group may be more depressed/anxious for unrelated reasons, or, the absence of treatment may leave them feeling uneasy. When compared to study subjects from our prior meningioma case/control study of QOL, these results suggest significant reduction in QOL for LGG patients and possible variation by XRT treatment and thus the need to better understand these differences.

QOLP-23. PALLIATIVE CARE AND END OF LIFE HEALTHCARE UTILIZATION IN PATIENTS WITH INCURABLE PRIMARY MALIGNANT BRAIN TUMORS

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BACKGROUND: Patients with primary malignant brain tumors (PMBT) experience high symptom burden and mortality. However, their healthcare utilization at the end of life, including palliative care utilization, has not been well studied. **METHODS:** We conducted a single-center, retrospective analysis of deceased patients diagnosed with PMBT between 1/1/12 and 8/31/15. We assessed healthcare utilization including hospitalizations, palliative care usage and hospice enrollment. **RESULTS:** We identified 200 patients with incurable PMBT within the above timeframe. The majority of patients (86.0%, 171/200) had a diagnosis of glioblastoma. Most patients were white (185/200, 93.0%), non-Hispanic (189/200, 95.5%), and male (117/200, 59.0%). Median survival was 13.8 months. When excluding hospitalizations for planned procedures or chemotherapy, the median number of hospitalizations was 2 (range 0–9). In the last 30 days of life, 61/200 patients (30.5%) were hospitalized. Notably, only 63/200 (31.5%) patients ever received a palliative care consultation. The majority of these patients (39/63, 61.9%) were seen by palliative care only as inpatients. Of those seen by palliative care, only 19/63 (30.2%) had their first contact in the outpatient setting. The median time from first palliative care consultation to death was 53 days (range 0–981) and from first inpatient consultation to death was 32 days (range 0–354). Most patients were enrolled in hospice prior to death (154/200, 77.0%), with a median length of stay in hospice of 25 days (range 0–405). The majority of patients (112/200, 56.0%) died at home, 6.5% (13/200) died in the hospital, while 29.5% (59/200) died in a skilled nursing or hospice facility. **CONCLUSIONS:** Despite the known poor prognosis in patients with PMBT, palliative care is used infrequently, late in the disease course and typically initiated only in the inpatient setting. As such, there is a need to develop and study interventions to ensure timely outpatient palliative care referral in this population.

QOLP-24. ATTITUDES TOWARD FERTILITY AND FERTILITY PRESERVATION IN WOMEN WITH GLIOMA

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BACKGROUND: No studies have examined the fertility priorities of women undergoing treatment for glioma. Glioma patients frequently undergo chemotherapy as part of their treatment, however it is unknown whether patients are aware of the possible effects of treatment on their fertility. Our objective was to assess the fertility priorities of glioma patients and ascertain whether female glioma patients are being effectively counseled on the effects of chemotherapy on fertility prior to beginning treatment. **METHODS:** The sample was composed of female patients from the Neuro-oncology clinic of the University of California, San Francisco. Participants completed a cross-sectional survey between October 2010 and December 2013 exploring their attitudes toward fertility and their experience with fertility counseling prior to chemotherapy initiation. **RESULTS:** Seventy-two women completed the survey. Analysis of the survey results showed that 30% of women receiving chemotherapy reported having a discussion regarding fertility preservation prior to beginning treatment. Of those who reported having this discussion, 80% were aware that chemotherapy could negatively affect their fertility. Many women reported that while fertility preservation was not important to them at the time of diagnosis, it was a priority for them at the time of survey completion. Although interest in having children tended

to decrease after cancer treatment, the majority of respondents reported desiring a child after treatment. **CONCLUSIONS:** The data obtained in this study suggest a lack of understanding of reproductive priorities which may be addressed with a more comprehensive fertility discussion prior to beginning treatment.

QOLP-25. QUALITY OF LIFE FOLLOWING RE-IRRADIATION FOR RECURRENT HIGH GRADE GLIOMA

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BACKGROUND: Re-irradiation has recently garnered interest as a treatment option for recurrent high grade glioma. Evidence supporting benefits in this population is evolving, but little is known about impact on quality of life (QOL). QOL patient reports were collected in a phase II hypofractionated re-irradiation study. **METHODS:** Patients with recurrent anaplastic glioma or glioblastoma were stratified into four groups based on histology and prior bevacizumab exposure. Treatment consisted of 45 Gy radiation delivered in 25 fractions with daily temozolomide 75 mg/m² and bevacizumab 10 mg/kg every 2 weeks. This was followed by adjuvant daily temozolomide 50 mg/m² for 6 weeks and bevacizumab 10 mg/kg every 2 weeks in an 8 week cycle for up to 6 cycles, or until progression or intolerance. FACT-Brain and FACIT-Fatigue were collected as secondary end-point data prior to treatment start, at end of the concurrent phase, and after each cycle. **RESULTS:** Of 54 patients treated, 42 (78%) had evaluable QOL data. Mean baseline FACT-Br and FACIT-Fatigue scores were within expected ranges for persons with brain tumors. Significant declines were noted in FACT-Br Total (p=0.4), FACT-Br TOI (p=.05) and FACIT-Fatigue (p<.01) at the end of concurrent treatment, but FACT-Br Total and FACT-Br TOI scores rebounded to baseline level by end of cycle 1 and were maintained at cycle 2 end. Fatigue scores improved after cycle 1 but did not return to baseline until after cycle 2. **CONCLUSION:** Re-irradiation with temozolomide and bevacizumab is associated with decline in QOL immediately after concurrent treatment but QOL improves over time. This QOL pattern is similar to that seen with initial radiation treatment and suggests that re-irradiation does not progressively adversely affect QOL for at least the first four months after treatment.

QOLP-26. PATIENT REPORTED OUTCOMES MEASUREMENT INFORMATION SYSTEM (PROMIS) SCREENING FOR ANXIETY & DEPRESSION IN CENTRAL NERVOUS SYSTEM(CNS) CANCER: LARGE COHORT REPORT FROM THE NEURO-ONCOLOGY BRANCH NATURAL HISTORY STUDY (NOB-NHS).

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BACKGROUND: Emotional distress, including anxiety and depression, is associated with significant morbidity. Studies in CNS tumor patients have been limited by small non-diverse samples. The NOB-NHS includes screening for depression and anxiety patients undergoing longitudinal care in the NOB. In a previously reported pilot study, anxiety(11%) and depression(15%), and association with performance status and use of psychotropic medications were reported. This report attempts to validate these findings in a larger more diverse cohort. **METHODS:** All patients(n= 269) enrolled in the NOB-NHS were screened for depression and anxiety using PROMIS measures. Descriptive statistics and standardized classification of moderate-severe depression and anxiety are used to describe the sample characteristics. Emotional Distress was defined as PROMIS T scores > 60 on depression, anxiety, or both scales. Chi-square and Fishers exact tests were used to identify associations. Significance level was set at p < 0.05. **RESULTS:** The sample was primarily white(82%), males(61%), 54 months(0-398) from diagnosis, with a median age of 49(21-81), good performance status(KPS 90, 75%) and a high-grade neoplasm(63%) with glioblastoma(30%) the most common diagnosis. Significant emotional distress was present in 19% of the sample. Poor performance status(28%) and use of psychotropic medications(32%) were both significantly associated with emotional distress(X²(1)= 4.8, p < 0.03 and X²(1)= 7.4, p < 0.01), respectively. Past recurrence(25%), progression/pseudo-progression on MRI(26%), female gender(23%), corticosteroid use(28%) and non-glioblastoma(21%) had higher incidence of distress, although not significant. Tumor location, age and disease status was not associated with emotional distress in this sample. **CONCLUSION:** This is

one of the largest reported cohorts using screening measures for emotional distress in this population and confirms earlier findings of association with functional status and psychotropic medications. Future studies will investigate longitudinal trends, diagnostic referrals, and emotional distress phenotypes, including genomic predisposition, to improve individual patient/population care.

QOLP-27. USE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE IN GLIOMA PATIENTS

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INTRODUCTION: Beside conventional tumor-specific therapy, glioma patients, as any cancer patients, may seek additional support of complementary and alternative medicine (CAM) treatment during the course of disease. CAM represents a heterogeneous field of agents and treatments, and the use and type may vary from country to country. Despite the existing demand from patients, the use of CAM is neither, by default, incorporated in clinical oncological routine, nor well assessed and documented to date, and little is known about type and motivation for CAM use in specific patient groups. **MATERIAL AND METHODS:** We conducted a multi-center cross-sectional survey analysis of CAM use in patients suffering from gliomas WHO grades II to IV, treated at specialized Neuro-Oncology Centers in Switzerland in the years 2012–2015. A questionnaire, comprising multiple choice questions as well as open response questions, was handed out to patients on the occasion of an appointment. **RESULTS:** A total of 208 patients returned the survey, of which 101 patients (49 %) reported the use of CAM, past or present. Of these, 60 were male and 41 female. The main reported motivation for CAM use was the desire to contribute actively to the cancer treatment. CAM use was associated with younger age and was distributed amongst all WHO grades. Usually, CAM use was not supervised by a health care professional, and the costs were not necessarily reimbursed by the insurance company. **CONCLUSIONS:** In this Swiss multi-center survey analysis, half of the patients harboring a glioma reported CAM use during the course of the disease. Physicians should be aware of this demand and explore CAM use in their patients, to allow for better counseling and avoid potential interactions of CAM with the tumor-specific therapy. Funded by the Swiss Brain Tumor Foundation

QOLP-28. FEAR OF DYING IN ADULT PRIMARY BRAIN TUMOR PATIENTS: AGE AND GENDER EFFECTS

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BACKGROUND: Given the lack of curative treatment options, brain tumor patients may have increased vulnerability to death anxiety, yet the literature to date remains sparse. Two consistent findings associated with death anxiety are age and gender effects, with younger adult women reporting higher rates. Furthermore, death anxiety is often underreported and therefore goes untreated, which can negatively impact quality of life and functioning. The purpose of the present study was to address these gaps in the literature by preliminarily investigating prevalence of and associations with death anxiety in brain tumor patients. **METHODS:** Eighty-six (51% male, age range 19–81 years) patients diagnosed with primary brain tumors (PBT; grades I-IV) participated in routine neuropsychological evaluations including emotional questionnaires. A single-item question from the Beck Anxiety Inventory (BAI) assessed fear of dying. Descriptive analyses, t-tests, and Pearson correlations were conducted to explore age and gender effects on patients' fear of death. **RESULTS:** Thirty percent (n=26) of patients reported fear of dying at the time of evaluation. Women endorsed higher fear severity than men (0.71 vs 0.33; p = .048). There was no relationship between fear severity and age. However, when examining the two effects together, there was a significant difference between men and women aged 30–39 years (0.00 vs. 1.17; p = .035). All descriptive statistics, comparisons, and relationships will be presented. **CONCLUSIONS:** Results suggest that a significant portion of PBT patients experience a fear of death, and this appears to be more severe in female compared to male patients. Age did not have an independent effect, but young women reported increased fear of death when compared to young men. These