Title
INNV-29. BILATERAL PARIETAL LYMPHOMA LESIONS RESPONDED DIFFERENTLY TO HD-MTX AND RITUXIMAB/TEMOZOLOMIDE THERAPY

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Cloud website analytics. NCI-CONNECT referrals and study participation data were collected prospectively. RESULTS: The English website launched in September 2018 and visits have increased 2,384%. The Spanish website launched in March 2020 and visits have increased 1,137%. From April 2020 to March 2021, top website page views by English page views / Spanish page views / people living with this disease include oligodendroglioma (43,859 / 8,241 / 11,757), ependymoma (31,579 / 12,684 / 13,294), meningioma (30,261 / 19,507 / 2,692), medulloblastoma (28,487 / 9,999 / 3,840), diffuse midline gliomas (23,064 / 3,851 / 6,033), and pineal region tumors (19,939 / 9,973 / 1,297). Referral rates and participation have accelerated – 45% of patients visiting the Neuro-Oncology Clinic at NIH have a rare CNS tumor and 409 patients enrolled in an NCI-CONNECT study. CONCLUSION: Patient-focused websites can provide guidance to those affected by rare cancers outside of in-person health care visits. The NCI-CONNECT website is an educational and clinical resource for patients and families affected by rare CNS tumors and was created to raise awareness and improve patient outcomes.

INNV-27. AN INNOVATIVE VIRTUAL MULTI-INSTITUTIONAL, MULTIDISCIPLINARY NEURO-ONCOLOGY TUMOR BOARD: THE NIH-NOB EXPERIENCE DURING THE COVID-19 PANDEMIC

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BACKGROUND: The American Academy of Neurology Institute and Society for Neuro-Oncology recommend multidisciplinary tumor board (MTB) meetings as a quality metric in neuro-oncology. With the COVID-19 pandemic resulting in travel restrictions, we expanded our existing MTB by transitioning to a virtual format that maintained our commitment to providing consultation for primary CNS tumor cases. This transition permitted participation by neuro-oncology teams from over 30 Brain Tumor Trials Collaborative (BTTC)/National Cancer Institute-Comprehensive Oncology Network Evaluating Rare CNS Tumors (NCI-CONNECT) centers across the United States. Here, we describe results from opening our MTB remotely to these teams. METHODS: We retrospectively reviewed records from remote MTB meetings held between April 2020 and March 2021. To gauge the impact of our MTB on clinical management, we administered a brief survey querying BTTC members. RESULTS: Twenty-eight providers presented 41 cases during 24 virtual MTB meetings (range: 1-4 cases per meeting). Two cases (5%) were presented only for educational value. Approximately half (54%) of the cases discussed dealt with diagnosis/management of an NCI-CONNECT rare CNS tumor. During MTB discussions of the 39 cases seeking diagnosis/management recommendations, 32% received clinical trial recommendations, 10% were suggested to enroll in the NCI Neuro-Oncology Branch (NOB) Natural History Study (NCT02851706), 17% received a recommendation to obtain central neuropathology review, and 100% received recommendations for further disease management. Most BTTC survey respondents (83%) found these recommendations impactful in the management/treatment of their presented case or generally useful/informative for their clinical practice. CONCLUSION: We describe the feasibility and utility of an innovative virtual multi-institutional MTB. These novel remote meetings allowed for discussion of complex neuro-oncology cases and recommendations from experts, particularly important for those with rare CNS tumors. Our study's findings during the COVID-19 pandemic of the value of providing remote access to MTBs should apply post-pandemic.

INNV-28. POTENTIAL EFFECTIVE CONSOLIDATION THERAPY WITH SINGLE AGENT IBRUTINIB FOR A CASE WITH PRIMARY CNS LYMPHOMA AFTER INITIAL HD-MTX AND RITUXIMAB INDUCTION THERAPY

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INTRODUCTION: Primary CNS Lymphoma (PCNSL) is a rare and aggressive cancer that originates from lymphocytes and develops in the central nervous system. Standard induction therapy involves high-dose methotrexate (HD-MTX)-based chemotherapy, which achieves complete or partial response in most PCNSL patients. However, there is no standard consolidation therapy. We report one case in which ibrutinib, a Bruton's tyrosine kinase inhibitor, replaced low-dose WBRT as consolidation therapy after induction by HD-MTX and rituximab. Ibrutinib treatment yielded good tolerance and further resolution of small residue lymphoma. CASE REPORT: The patient is a 77-year-old female who presented with slurred speech, right-sided weakness, and difficulty word-finding in early 2020. Brain MRI found multifocal lesions, and biopsy of the largest lesion near the left lateral ventricle revealed diffuse large B cell lymphoma. The patient began HD-MTX at 6 g/m^2 for the first cycle of induction therapy. She continued HD-MTX every two weeks, but dosage was reduced every cycle due to worsening renal function. Ultimately, MTX was discontinued after 6 cycles. Brain MRI showed significant response after HD-MTX except for small residue lymphoma at the biopsy area. 2nd line regimen rituximab and temozolomide was given to complete induction. Brain MRI was stable, but the small enhancing residue lymphoma at left peri-ventricle area was persistent after the induction therapy (uCR). Ibrutinib as consolidation therapy began after discussion with the patient. The patient tolerated 560 mg ibrutinib for 6 cycles initially, then switched to a reduced dose of 420 mg for cycles 7 and 8 due to neutropenia. Brain MRIs have been stable with resolution of the small lymphoma residue after 6 cycles of ibrutinib. The patient continues ibrutinib for the goal of one year of consolidation therapy. DISCUSSION: Our case highlights the potential of single-agent ibrutinib as consolidation therapy for PCNSL after HD-MTX and rituximab/temzolomide induction therapy.

INNV-29. BILATERAL PARIETAL LYMPHOMA LESIONS RESPONDED DIFFERENTLY TO HD-MTX AND RITUXIMAB/TEMOZOLOMIDE THERAPY

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INTRODUCTION: Primary CNS lymphoma is a rare aggressive hematological malignancy. Current chemotherapy for induction phase is HD-MTX single agent or HD-MTX based combination regimen. We report a rare case whose left and right parietal lymphoma lesions in the brain responded to different induction therapy regimens during the induction phase. CASE REPORT: A 43-year-old female presented with seizure and her brain MRI showed bilateral parietal brain lesions in January of 2020. Biopsy and work-up revealed primary CNS diffuse large B-cell lymphoma (DLBCL). The patient underwent HD-MTX therapy. Brain MRI showed clear progression of left parietal lymphoma but stable right parietal lymphoma after two cycles of HD-MTX at 8 g/m^2. The treatment was switched to a rituximab 750 mg/m^2 weekly and temozolomide 150 mg/m^2 daily one-week-on and one-week-off regimen. After 8 weeks, her brain MRI showed nearly complete response of her left parietal lymphoma to rituximab/temozolomide but progression of her right parietal lymphoma. She was switched back to HD-MTX and completed total 8 cycles. Her right parietal lymphoma lesion showed complete response to HD-MTX. The patient is doing well and has been off the treatment over the past 10 months and is waiting for consolidation therapy with autologous stem cell transplantation that has been postponed due to the COVID pandemic. DISCUSSION: Our case highlights the very rare heterogenous feature of primary CNS lymphoma responding to different treatment regimen. Biopsy of bilateral heterogeneous lesions may be indicated to compare the different molecular features of the lymphoma to find underlying mechanism if they respond to treatment differently. Specific treatment regimen should be selected based on the responsiveness of CNS

lymphoma lesions or combination therapy is selected to cover the heterogeneous susceptibility to chemotherapy regimens.

INNV-30. USE OF MULTIDISCIPLINARY TEAMS AND MULTIMEDIA APPROACHES TO DEVELOP AND DISSEMINATE SYMPTOM AND DISEASE EDUCATIONAL MATERIALS FOR RARE CENTRAL NERVOUS SYSTEM (CNS) TUMOR PATIENTS

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BACKGROUND: Primary CNS tumors represent less than 2% of all cancers, with the majority of patients receiving care outside of specialty centers. Patients are highly symptomatic while trying to navigate care for their rare disease and evidence-based tumor and symptom education is limited. Our primary objective was to create and disseminate patient-centered content utilizing multidisciplinary teams and health communication to improve access to content. METHODS: The multidisciplinary team of neuro-oncology scientists and health care providers developed content from evidence-based sources. The team partnered with communication specialists to ensure health literacy and established outreach strategies for use on social media, e-newsletters, and web- and app-based programs. Web analytic tools assessed outreach and efficacy. RESULTS: Educational content for 12 rare tumors and 6 self-care topics was created using evidence-based sources and multidisciplinary team review. Content was published on the National Cancer Institute Comprehensive Oncology Network Evaluating Rare CNS Tumors (NCI-CONNECT) website and disseminated via multimedia platforms, including e-newsletters and social media (private Facebook group and Twitter). Since launching the website in September 2018, visits have increased 2,384%. The content was also shared directly to 6,156 newsletter subscribers, 4,897 Twitter followers with greater than 1 million impressions per year, 407 Facebook members, 9 non-profit advocacy partners, and thousands of attendees at more than 10 patient-focused neuro-oncology events. This outreach approach is now being replicated for symptom management content on the NCI-CONNECT website and a symptom tracking and self-care mobile application launching in 2021. CONCLUSIONS: By marrying patient-centered health communication, education, and outreach, our team successfully created highly sought content that reflects the unique needs of CNS tumor patients and their families. This material can educate neuro-oncology patients on their specific tumor, promote self-care, facilitate symptom management, and empower families to advocate for their unique needs, reaching outside traditional health care systems.

INNV-31. NEURO-ONCOLOGY OUTPATIENT SATISFACTION IS MAINTAINED IN THE ERA OF COVID-19 TELEMEDICINE

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INTRODUCTION: The use of telemedicine increased during the COVID-19 pandemic. However, the impact on patient satisfaction in the Neuro-oncology population is unknown. This quality improvement project compares outpatient satisfaction before and during the COVID-19 pandemic as well as in-person versus telemedicine platforms during the pandemic. METHODS: We performed an IRB-exempt retrospective analysis of aggregate de-identified outpatient satisfaction scores among Neuro-oncology patients seen at The Preston Robert Tisch Brain Tumor Center (PRTBTC) at Duke University. The Clinician & Group Consumer Assessment of Healthcare Providers and Systems (CG-CAHPS) is a survey developed and distributed by Press Ganey Associates, and is the most widely used outpatient satisfaction survey in the United States. We compared pre-COVID-19 CG-CAHPS scores from patients who received in-person care at the PRBTC between April 2019 and March 2020 to COVID-19 pandemic CG-CAHPS scores (i.e. those who received either telemedicine or in-person care at the PRTBTC) from April 2020 to March 2021. RESULTS: Approximately 1448 surveys were completed for both in-person and telemedicine visits. During the pandemic, 48.6% of surveys represented telemedicine, with monthly variations from 84.6% (April 2020) to 21.4% (March 2021). Patient satisfaction scores pre-COVID-19 were similar to those during the pandemic: overall provider rating from 0-10 (9.28 v 9.36), knowledge of medical history (96.9% v 95.4%), listens carefully (96.6% v 96.9%), shows respect (97.2% v 98.1%), and time spent (93.2% v 95.5%). During the COVID-19 pandemic, in-person and telemedicine demonstrate similar levels of satisfaction: overall provider rating from 0-10 (9.29 v 9.48), knowledge of medical history (94.9% v 96.1%), listens carefully (95.4% v 99.0%), shows respect (97.5% v 99.0%), and time spent (94.7% v 96.7%). CONCLUSION: Outpatient satisfaction prior to and during the COVID-19 pandemic was similar. Patients reported similar satisfaction between in-person and telemedicine platforms. We support the ongoing use of telemedicine for outpatient Neuro-oncology.

INNV-32. ACCESS TO SPECIALTY RADIATION CARE FOR PATIENTS WITH RESECTABLE BRAIN TUMORS

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INTRODUCTION: Many patients with brain tumors face challenges with access to care. For rural patients, prolonged travel times may limit access to appropriate radiotherapy. Radiation centers (RCs) offering specialized brain radiotherapy, e.g., stereotactic radiosurgery (SRS), are geographically limited. Brain brachytherapy at the time of resection offers an option for such patients, but technical challenges have limited the adoption. To address the limitations of traditional brachytherapy, a device with Cs-131 seeds embedded in a bioresorbable collagen tile (GammaTile (GT), GT Medical Technologies, Tempe, AZ) was developed. The device is FDA-cleared for permanent implantation at the time of resection for all recurrent intracranial tumors and newly diagnosed malignant intracranial neoplasms. To investigate if wider availability of this treatment could possibly lower the geographic barrier to access to care, we mapped the US population against existing RCs with brain tumor expertise and neurosurgery centers (NSCs) performing craniotomies. METHODS: We analyzed 2018 CMS claims data using CPT codes for single- and multi-fraction SRS to identify RCs with brain tumor treatment expertise and mapped these against the population. Using similar methodology, using CPT codes for craniotomies, we identified NSCs, as any facility performing craniotomies is potentially eligible to implant the device. RESULTS: 135 RCs used CPT codes for SRS. 193-, 119-, 82-, and 52-million Americans lived >30-, >60-, >90-, and >120-minutes from one of these centers, respectively. 530 NSCs preform craniotomies, including ≥ 1 in every state, a 4-fold increase over the number of RCs offering SRS. CONCLUSIONS: For many patients, substantial travel distances limit access to RCs with brain tumor treatment expertise. In contrast, the 530 craniotomy-performing NSCs have far greater geographic dispersion. The option of undergoing brain radiation with GT implantation at the time of brain tumor craniotomy brings treatment closer to millions, ensures compliance, and reduces additional travel for follow-up radiation treatment.

INNV-33. THE IMPACT OF COVID-19 ON NEURO-ONCOLOGY CLINICAL TRIALS DURING WAVE 1 AND WAVE 2 AT A FRONTLINE DETROIT HEALTH CARE SYSTEM

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In the wake of the Coronavirus disease outbreak (COVID-19), clinical trial operations were significantly impacted following the shutdown of elective healthcare services and even emergency operations. When the pandemic hit Detroit, Michigan in March 2020, the Hermelin Brain Tumor Center (HBTC) at Henry Ford Health System was consumed in COVID-19 emergency care which affected patient enrollment, conduct of trial activities, therapeutic treatment, deviation from protocol requirements, and sponsor-study site contact. The first Metro-Detroit COVID-19 case was confirmed March 10th 2020. At that time there were 18 active brain tumor clinical trials (phase 1 - phase 3) providing anti-cancer therapies. Trial modifications included decentralized operations to buildings with clinic and radiology access away from inpatient COVID-19 care, utilization of telemedicine for non-essential visits, shipping of investigational products to patient home, and in some cases utilization of local results in place of central histopathological confirmation. By April 2020, trials were ranked based on availability of alternative therapies and subject safety in 4 tiers that correlated with subject benefit and impact on care. Trials were given a prioritization level to commence enrollment with priority given to trials where no standard of care exists. Of the HBTC trials, one was graded Tier 1 and most were graded Tier 2. All patients already enrolled continued on study. As restrictions eased, trials were opened in a sequential manner. Changes that were made during the first wave of the pandemic helped to minimize its effect on clinical trial operation and enrollment during the second wave in Fall 2020. Thus, leading toward a decrease in trial deviations and increased enrollment during the 2nd wave. The changes made during the first wave helped to safely continue enrollment and treatment during the second wave and will have a longstanding impact on how clinical trials will be conducted in the future.