COT-12
CLINICAL FEATURE OF END-STAGE GliOBlastomas
Norihiko Saito1, Nozomi Hira1, Naoki Kushida2, Sho Sato1, Yu Hiramoto1, Satoshi Fujita1, Haruo Nakayama1, Morito Hayashi1, Keisuke Ito1, Satoshi Iwabuchi1; Department of Neurosurgery, Toho University Ohashi Medical Center, Tokyo, Japan

Glioblastoma is the most common and most aggressive primary brain tumor. Even with optimal treatment, tumors repeatedly recur and grow, eventually invading the entire brain. Few studies have evaluated the pathogenesis and pathophysiology of terminal glioblastoma. In this study, we describe the pathological characteristics of 26 glioblastoma cases (including 18 autopsy cases) that were analyzed from initial treatment to confirmation of death at our hospital. The mean age of the 26 patients was 60.7 years, and mean overall survival was 16.7 months. The interval of clinical symptoms from coma to death was 36.2 days, and the interval from onset of respiratory depression to death was 12 days. Steroids and antiepileptic drugs were often continued after completion of active treatment. Psychiatric symptoms and central fever were observed in patients with intrathecal dissemination, and disease progression was rapid in these patients. These patients presented with a variety of symptoms, including psychiatric symptoms, headache, neck pain, and central fever. In addition, a case of diffuse infiltration from the brain parenchyma to the pterygopaternal area in a patient treated with bevacizumab suggested a possible change in the form of recurrence. In the terminal stage of glioblastoma, hypoxemia due to disturbance of the respiratory center results in progression from impaired consciousness to death. Because convulsive seizures are rare when patients are close to death, continuation of antiepileptic drugs may not be necessary. Although many patients develop local recurrences, new treatments may change the mode of recurrence in glioblastoma. The number of patients receiving home care and end-of-life care has recently been increasing because of medical improvements, such as home care. Further study of the pathophysiology of glioblastoma may yield better end-of-life care.

Key words: glioblastoma / end-stage / autopsy

COT-13
LUMINANCE ANALYSIS OF 5-AMINOEVULINIC ACID USING IMAGE J FOR MALIGNANT BRAIN TUMOR
Takashi Kon1, Yusuke Kobayashi1, Youseke Sato1, Katsuyoshi Shimizu1, Toshru Mizumoto1; Department of Neurosurgery, Showa University School of Medicine, Tokyo, Japan

Purpose: For malignant brain tumor surgery, photodynamic diagnosis (PDD) with 5-aminolevulinic acid (5-ALA) is useful for maximal removal of the tumor. Although it has the advantage of identifying the presence or absence of residual tumors during surgery, there are variations in positive rates, and the classification is limited, based on visual inspection such as Stummer's classification (strong, vague, none). We analyzed the luminance of positive findings using software Image J for brain tumor surgery using 5-ALA, and report the results. Materials and Methods: From April 2018 to March 2021, 31 patients with suspected malignant glioma before surgery were included. Intraoperative 5-ALA positive findings were analyzed by software Image J (Wayne Rasband: NIH), the luminance was measured with a histogram, and compared the maximum luminance titer. Results: Among the positive cases, the average maximum luminance value for malignant glioma was 101 (50–168), which consisted of 11 cases of Glioblastoma, 1 case of Oligodendrogloma, and 1 case of anaplastic astrocytoma. The average maximum brightness of metastatic brain tumors is lower than that of malignant gliomas, even if they are visually strong, 83.5 (28–121). Conclusions: Even if it is strongly present in the ascertainment, Stummer classification, it may be possible to classify in detail by analyzing luminance with Image J. In addition, more objective index is necessary to classify the vague findings.

Key words: 5-ALA / malignant brain tumor / fluorescence-guided surgery

COT-16
DEVELOPMENT OF AUTOMATIC LESION EXTRACTION APPLICATION USING ARTIFICIAL INTELLIGENCE FOR THE PURPOSE OF IMPROVING TUMOR VOLUME MEASUREMENT OF MENINGIOMA
Ryuchi Hirayama1, Takamitsu Iwata1, Shuei Yamada1, Hideki Kuroda1, Tomoyoshi Nakagawa2, Noriyuki Kijima1, Yoshikazu Okita1, Naohiko Kishima1,1; Department of Neurosurgery, Osaka University School of Medicine, Osaka, Japan

BACKGROUND: With the widespread use of MRI equipment and brain surgery, the ability to perform follow-up examinations for meningiomas has increased. On the other hand, an objective evaluation index for meningiomas characterized by slow changes on imaging has not been established. To establish a volume-based evaluation index for meningiomas, we are developing an application for automatic lesion extraction using artificial intelligence as a highly reproducible tumor volume measurement technique that enables large volume image data processing. METHODS: In this study, 195 patients with meningioma who underwent contrast-enhanced MRI imaging at Osaka University Hospital were included. The images were manually extracted by three neurosurgeons and used as supervised data. deepLabV3 was used as the learning network. All the supervised data were randomly divided into training (40%) and test (20%) data, and the application was constructed by deep learning and validation with 5-fold cross-validation. The matching rate of the region of interest automatically extracted by the device against the test data and the mean square error rate of the calculated tumor volume were used as indices of the product measurement performance. RESULTS: The matching rate using the automatic extraction application for the correct data (Dice index) was 91.5% on average. The mean square error rate of the tumor volume calculated from these extracted regions was 8.84%. CONCLUSION: We consider that this application using artificial intelligence may have a certain impact on the accuracy of the accuracy of extracted lesions. In the future, it is necessary not only to improve the performance of the equipment but also to clarify the clinical significance of the new imaging biomarkers based on tumor volume that can be obtained from these lesion extraction techniques.

Key words: Meningioma / Automated volumetry / Artificial intelligence

COT-18
TRENDS IN PRIMARY BRAIN TUMORS IN KUMAMOTO PREFECTURE WITH DECLINING BIRTHRATE AND AGING POPULATION - KUMAMOTO PREFECTURE BRAIN TUMOR EPIDEMIOLOGICAL SURVEY
Nakatsuki Ryojima1, Takashi Kijima1, Akitake Mukaza1; Department of Neurosurgery Kumamoto University Hospital, Kumamoto, Japan

Backgrounds: The demographic characteristics of Kumamoto Prefecture, that there is little population movement and the population remains constant at about 1.8 million, but in recent years the birthrate is declining and the population is aging. We have been conducting the Kumamoto Prefecture Brain Tumor Epidemiological Survey since 1989 in cooperation with neurosurgical institutions in the prefecture. In this study, we examined whether recent demographic changes have affected the incidence of primary brain tumors (BT). Methods: Patients with primary BT were collected annually from 44 institutions in Kumamoto Prefecture (as of 2020), and the number of incidences per 100,000 population was calculated for each BT for each year, excluding patients living outside the prefecture and duplicate cases. Results: The total number of primary BT was 11,441 (top 3: meningioma 40%, pituitary adenoma 17%, glioma 17%). Of 4261 men with primary BT, the top 3 were meningioma (27%), glioma (23.7%), and pituitary adenoma (18.4%), and 7180 women (top 3: meningioma (47.7%), pituitary adenoma (16.2%), and glioma (12.9%)). The number of primary BT increased every year, and the incidence increased significantly when comparing 1989–2004 and 2005–2020 (1989–2004 vs. 2005–2020 was 25,070,000, p<0.000001). Typical brain tumor (meningioma, pituitary adenoma, glioma, schwannoma, malignant lymphoma) also increased year by year, especially asymptomatic meningioma. The median age of asymptomatic meningiomas was significantly higher than that of symptomatic meningiomas (60 vs. 65 years, p<0.01). Meningiomas increased significantly in the later stages compared with the early stages in children (0–14 years) and the elderly (65 years and older). Conclusion: Our results suggest that an increase in the number of BT such as glioblastoma, which are more common in the elderly, as well as an increase in the number of opportunities for intracranial examinations in the aging of the population may be responsible for the increased incidence of primary BT.

Key words: Kumamoto Prefecture Brain Tumor Epidemiological Survey / low birthrate and longevity / primary brain tumor incidence

COT-28
QUESTIONNAIRE SURVEY REGARDING WORKING CONDITION OF THE MEMBERS BELONGING TO THE JAPAN SOCIETY FOR NEURO-ONCOLOGY (JSNO) BY THE GENDER EQUALITY AND DIVERSITY COMMITTEE OF THE JSNO, 2021
Takamitsu Fujimaki1,2, Kaoru Tamura1,2, Tatsuya Abe1,2, Hiroki Yamada3, Yukiya Shinojima3,4, Yuko Itoyama3,4, Takashi Shinojima5, Akiko Higuchi1,2, Yoko Watanabe1,2, Masayuki Umeda1,2, Gender Equality and Diversity Committee of the Japan Society for Neuro-oncology, Japan Society for Neuro-oncology

Gender Equality and Diversity Committee ("Women and Diversity in Neuro-oncology - WING") of the Japan Society for Neuro-oncology (JSNO) was established in November 2020 with the aim of supporting and providing better opportunities for diverse members including women in JSNO. In order to achieve this goal, the JSNO and WING planned to conduct a questionnaire survey of all members in the fall of 2021 to investigate the actual situation of members. The targets of this study were clinicians, basic researchers, nurses and allied health professionals including...
medical social workers. The survey is conducted after obtaining the approval of the Ethics Committee and Academic Committee of the JSNO. Method: As of September 26, this questionnaire is currently underway online and anonymously. The questionnaire includes questions on work environment, home environment (including childcare and nursing care) for understanding work-life balance, existence of problems related to career development, support measures considered necessary, and expectations for WING. Results: As the results of the questionnaire were not available at the time of writing this abstract. However at the presentation we will present the statistical analysis of the survey. Various comparisons of the questionnaire items common to those of the Japan Neurosurgical Society and the Japan Pediatric Society, which were conducted several years before this survey. Conclusion: Respect for diversity is increasingly important in the field of neuro-oncology. Surveys are important for the future success of our diverse community, and we believe that this survey will be an important milestone.

Key words: women in neuro-oncology | diversity | gender equality | questionnaire survey | career development

COT-29
THE JAPAN BRAIN TUMOR ALLIANCE: ACHIEVEMENTS IN 2020-2021: HIGHLIGHTS FOR NEURO-ONCOLOGISTS AND HEALTHCARE PROFESSIONALS
Koieki Nomura1, Laureline Gatellier2, Shuji Yamaguchi3, Shigeo Kato3, Hisato Tagawa4; 1Japan Brain Tumor Alliance

Brain tumors are a major shock at diagnosis for patients and their families, and the journey is hectic, impacted in various and complex ways, including acute and chronic episodes. The Japan Brain Tumor Alliance is a non-profit organisation, established in 2006 to support patients and their families. As our key activity, JBTA offers nation-wide patient support through patient-gathering meetings with and without health care professionals to openly share needs, issues and concerns, partly summarized and shared in the scientific field (Gatellier, 2021, OT Journal, vol 55 no.3, 257–259; Gatellier, 2021, MASCC Annual Meeting). JBTA actively collaborates with the International Brain Tumor Alliance, with recent outcome of an international study investigating the brain-tumor patient and caregiver experience during COVID-19 pandemic (Voisin et al., 2020, Neuro-oncology advances, 2(1), vdaa104). As part of collaboration with healthcare professionals in 2020–21, JBTA achievements include the review of clinical guidelines (as part of Patient and Public Involvement activity), information-sharing events with the Japan Clinical Oncology Group and the seminar with a group including occupational therapists. In addition, to highlight patients’ needs and priorities to the neuro-oncology community, since March 2020, JBTA shares the Japanese translation of the monthly JBTA e-newsletter broadcasting the latest and most relevant scientific, community information and brain tumor-related events around the world to healthcare professionals and brain tumor patients and families in Japan. These enlightening events place JBTA in an ideal position to lead research in the direction most meaningful to brain tumor patients.

Key words: Quality of Life | patients’ priorities | Patient Public Involvement

COT-30
EFFECT OF TUMOR RESECTION IN 11C METHIONINE ACCUMULATION AREA ON SURVIVAL IN PATIENTS WITH GLIOBLASTOMA
Kazutomi Ohmura1,2, Etsuko Ohwashi3,4, Yuka Ikegame1, Hiroaki Takeda2, Kazuhiro Miwa2, Hirohito Yano6,4, Kazutoshi Yokoyama1, Morio Kumagai3, Jun Shinoda1,4, Takashi Daimon2, Noriyuki Nakayama2, Toru Iwama4, Chubu Medical Center for Prolonged Traumatic Brain Dysfunction, Kizawa Memorial Hospital, Minokamo, Gifu, Japan 2Department of Neurosurgery, Gifu University Graduate School of Medicine, Gifu, Gifu, Japan 3Department of Neurosurgery, Kizawa Memorial Hospital Minokamo, Gifu, Japan 4Department of Clinical Brain Sciences, Gifu University Graduate School of Medicine, Minokamo, Gifu, Japan

The subjects were 353 gliomas and 125 meningiomas who received LEV or LCM, and compared it with the same incidence in meningioma patients. Multivariate logistic regression analysis was used to analyze the risk factors for the ASD-related eruption. Result: The subjects were 353 gliomas and 125 meningiomas who received LEV or LCM. The median ages are 44 ± 14.8 and 38 ± 13.2, respectively, and the male-female ratio is 203/150 and 53/72. There was no difference in the incidence of eruptions between the two groups, LEV and LCM, and the incidence of ASD-related eruptions in glioma patients was not significantly different between the LEV group (10/21(48.0%)) and the LCM group (13/20(65.0%)) (p = 0.53). In a multivariate analysis of factors for eruption, the incidence of ASD-related eruptions in glioma patients was higher than that in meningioma patients, and it was speculated that the treatment course specificity was more important than the disease-specific factors. Patients with glioma, especially those who have undergone chemoradiotherapy or have a history of drug allergies, require careful confirmation of the eruption.

Key words: anti-seizure drug | lacosamide | levetiracetam

COT-31
RISK FACTORS FOR THE DEVELOPMENT OF SKIN RASH WITH LEVETIRACETAM AND LACOSAMIDE IN PATIENTS WITH GLIOMA
Mikoto Onodera1, Yoshihiro Muragaki2,1, Atsushi Fukui3, Masayuki Nitta4, Taichi Sato4, Syunuke Tsuzuki3, Syunichi Kooryama3, Manabu Tanuma5, Toshimi Kimura6, Takakazu Kawamata7; 1Department of Pharmacy, Tokyo Women’s Medical University, Tokyo, Japan 2Faculty of Advanced Techno-Surgery, Institute of Advanced Biomedical Engineering and Science, Graduate School of Medicine, Tokyo Women’s Medical University, Tokyo, Japan 3Department of Neurosurgery, Tokyo Women’s Medical University, Tokyo, Japan

Introduction: Seizure control of in glioma patients is essential for quality of life. The new generation anti-seizure drug (ASD) is represented by lacosamide (LCM) and levetiracetam (LEV), and is said to have few side effects of eruption. We retrospectively analyzed the incidence of rash and related factors of the ASD, evaluated the safety of patients with glioma, and conducted a comparison with the evaluation of patients with meningioma. Method: We calculated the incidence of rash in patients who underwent glioma resection at our Hospital from January 2017 to December 2019 and were prescribed LEV or LCM, and compared it with the same incidence in meningioma patients. Multivariate logistic regression analysis was used to analyze the risk factors for the ASD-related eruption. Result: The incidence of rash in patients who underwent glioma resection was higher than that in meningioma patients. There was no difference in the incidence of eruptions between the two groups, LEV and LCM, and the incidence of ASD-related eruptions in glioma patients was significantly higher than that in meningioma patients (p = 0.006). The incidence of ASD-related eruptions in glioma patients was significantly different between the LEV group (10/21(48.0%)) and the LCM group (13/20(65.0%)) (p = 0.53). In a multivariate analysis of factors for eruption, the incidence of ASD-related eruptions in glioma patients was significantly higher than that in meningioma patients, and it was speculated that the treatment course specificity was more important than the disease-specific factors. Patients with glioma, especially those who have undergone chemoradiotherapy or have a history of drug allergies, require careful confirmation of the eruption.

Key words: anti-seizure drug | lacosamide | levetiracetam