scores of 48 LGG patients on a prospective, longitudinal study. General linear mixed models evaluated change in cognitive scores over time. RESULTS: The sample included 16 patients treated with PRT and 32 with SO (median follow-up=3.1 years, range 0.9–6.1). Median age of PRT patients was 8.2 years at diagnosis (range 1.0–14.4) and 9.4 years at PRT (range 4.2–16.7). 13 PRT patients also received surgery: 53.8% biopsy, 30.8% subtotal resection, 15.4% gross total resection. Tumor sites included: 31.2% hypothalamic/suprasellar, 25.0% optic pathway, 18.8% temporal, 25.0% other. Median age of SO patients was 8.2 years at diagnosis (range 2.9–18.6). Surgical outcomes were: 75.0% gross total resection, 21.9% biopsy/other. There were no group differences in diagnosis age, tumor volume, or shunt history (all $p>0.05$). Both PRT and SO groups displayed stable cognitive functioning over time (all $p>0.1$). Slopes (i.e., change in scores over time) did not differ between groups (all $p>0.1$). Age at treatment was not associated with slope or performance at last follow-up in either group (all $p>0.05$). CONCLUSIONS: We observed stable cognitive functioning, independent of age at treatment, following PRT for LGG. Outcomes were similar to patients receiving surgery only. Further examination in a larger sample is warranted.

RONC-13. RADIATION INDUCED BRAIN STEM GLIOMA AFTER RADIATION THERAPY FOR MIXED GERM CELL TUMOR

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We report a case of radiation-induced glioma in the pons after radiation therapy for germ cell tumor. A 17-year-old man was diagnosed as HCG and AFP secreting germ cell tumor at the age of 9. The tumor was located in the suprasellar region, which filled up most part of the third ventricle. Five courses of chemotherapy with cisplatin, etoposide, and cyclophosphamide, and whole ventricle plus local radiation therapy (total 51.2 Gy / 32Fr) were performed. After the treatment, most part of the tumor was regressed, and only small enhanced lesion remained. Six years after the treatment, he started to be ataxic, and worsened. An MRI revealed an enhanced lesion in the pons. Lesion biopsy was performed via the right cerebellar peduncle. Histopathological diagnosis confirmed the lesion was high grade glioma. He underwent extended local radiation therapy (50.4 Gy / 28 Fr) and administered temozolomide. Later, bevacizumab was added, and 3 months after treatment started, the size of the tumor was reduced and his symptoms were improving. There is no established treatment for radiation induced glioma. However, additional radiation therapy, temozolomide and bevacizumab appears to be useful to reduce tumor size and resolve the symptoms, even if it is transient.

RONC-15. OUTCOMES OF BRAIN AND SKULL-BASE TUMOURS IN ADOLESCENTS AND YOUNG ADULTS TREATED WITH PENCIL BEAM SCANNING PROTON THERAPY

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BACKGROUND: The use of highly conformal proton therapy in adolescents and young adults (AYAs) for management of brain/skull-base tumours is becoming increasingly common. This study aims to assess the long-term clinical outcomes, prognostic factors and employment status of AYAs (15–39 years) treated with pencil-beam-scanning proton-therapy (PT). METHODS: Between 1997–2018, 176 AYAs were treated with PT at the Paul Scherrer Institute. Median age was 30 years (range, 15–39) and the male/female ratio was 0.8. RESULTS: After a median follow-up of 66 months (range, 12–236), 24 (13.6%) local failures and 1 (0.6%) distant failure were observed between 6 and 152 months after PT. The most common histologies treated were chordomas/chondrosarcomas (61.4%), followed by meningiomas (14.2%) and gliomas (15.3%). The 6-year local-control (LC), distant-progression-free survival and overall-survival (OS) rate was 83.2%, 97.4% and 90.2% respectively. On univariate analysis, age ≥24 years was a negative prognostic factor for LC. Recurrent disease, infratentorial tumours and low-grade-glioma histology were poor prognostic factors for both LC and OS. The 6-year ≥G3 PT-related late toxicity-free survival was 88.5%. The moderate-high grade late toxicity crude rates were 37.8% G2, 12.2% G3, 0.6% G4 and 0.6% G5. No secondary malignancies were observed. The unemployment rate was 7.3% at PT, rising to 25.3% at survivorship. High-grade(≥G3) toxicity rate in the unemployed vs employed group was 21% vs 8.5%. CONCLUSION: PT is an effective treatment for AYAs with brain/skull-base tumours with good tumour control and acceptable long-term toxicity. Despite having satisfactory clinical outcomes, around 1 in 4 AYAs surviving brain/skull base tumours are unemployed.

RONC-16. PROTON BEAM THERAPY FOR PATIENTS WITH INTRACRANIAL EPENDYMOMA UNDER 3 YEARS OLD: INITIAL CLINICAL OUTCOMES

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BACKGROUND: Proton beam therapy (PBT) provides dosimetric benefits in sparing normal tissue when treating pediatric patients with brain tumors. We report the preliminary clinical outcomes of surgery and adjuvant PBT for patients under 3 years old diagnosed as intracranial ependymoma at our institute. METHODS: This is a retrospective review of the medical records for 3 children with ependymoma in the fourth ventricle, diagnosed between March 2013 and September 2019. PBT was performed after tumor resection in all the patients. RESULTS: Gross total resection was achieved in 2 males and 1 female patients with fourth ventricle WHO grade II to III ependymoma at 15, 18, and 37 months old. All the patients received adjuvant PBT (54.0 GyE/30 fractions) to the postoperative tumor bed under general anesthesia or sedation. PBT was acutely well tolerated, with mostly mild alopecia and skin reactions at the irradiated sites. At a median follow-up of 54 months (4–59 months) after irradiation, all the patients are alive without recurrence. No serious late adverse events were observed in any of the patients. CONCLUSION: The number of patients in this study remains small for drawing any definite conclusion, however our preliminary results are still encouraging. Further studies of a large number of pediatric patients with long term follow-up are needed to more fully assess tumor control and late adverse events.

RONC-17. STEREOTACTIC RADIOSURGERY FOR SPINE METASTASES IN PEDIATRIC MALIGNANCIES

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BACKGROUND: Spine stereotactic radiosurgery (SSRS) is a non-invasive technique that delivers ablative radiotherapy for optimal control of bony disease. While SSRS is known to provide excellent local control (LC) and minimal toxicity in adults, the role of SSRS in pediatrics is less clear. PURPOSE: To evaluate SSRS in pediatric patients with spinal metastases. METHODS: A retrospective review of patients (<18 yrs) treated with SSRS at MDACC was performed after IRB approval. Descriptive statistics were utilized for analysis. RESULTS: From 2011–2019, 12 metastatic osseous sites (3 cervical, 4 thoracic, 5 lumbar-sacral) in 9 patients were treated. Median follow-up was 9 months (range 2–41). Six males (67%) and 3 females (33%) all KPS ≥70, received radiation to ≤3 contiguous vertebral bodies. Median age was 16 yrs (range 8–18). No patients required sedation. Histologies included 7 osteosarcomas, one rhabdomyosarcoma and one Ewing's sarcoma. Metastatic epidural spinal cord compression scores ranged from 0 (6), 1b (3) and 3 (3). No sites had surgery prior to SSRS and one site received prior conventional radiation. SSRS doses included 24 Gy in 1 fraction (7), 24–27 Gy in 3 fractions (4) and 50 Gy in 5 fractions (1). Six-month LC was 83% with one local failure following 27 Gy. OS at 6 and 12 mo were 55% and 23%. There was no grade ≥3 acute toxicity, no radiation myelopathy or vertebral compression fractures. CONCLUSION: In this initial report, SSRS represents a promising modality that is well tolerated and provides excellent LC. However, further follow-up is warranted in the pediatric setting.

RONC-18. ANALYSIS OF BRAIN TUMOR INDUCED BY IRRADIATION IN CHILDHOOD - A SINGLE INSTITUTIONAL ANALYSIS

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BACKGROUND: Radiation-induced brain tumors are rare tumors that appear during long-term follow-up after radiation therapy. Children are at greater risk for radiation -induced brain tumors than adults. The clinical characteristics of radiation-induced brain tumor treated at our hospital