**Conclusions:** We think a dose of 30 Gy to the axis, with this chemotherapy, is inappropriate because five of the eight patients who received it had treatment failures in the spine, while a dose of 36 Gy seems to be appropriate, even further follow-up is necessary to evaluate the use of HFCSI in childhood medulloblastoma.

912 POSTER

## Analysis of proliferation and apoptosis in brain gliomas using MIB-1 monoclonal antibody and tunel labelling

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**Purpose:** Histological classification of gliomas is based on cellularity, mitoses, presence of necrosis, microvascular proliferation and nuclear polymorphism. Additional characterization of histopathological grading may be obtained by assessment of the proliferation rate by measuring the Ki-67 labelling index using the monoclonal MIB-1 antibody and the apoptotic ratio by in situ labelling of DNA strand breaks using TdT mediated dUTP/dATP 3'OH end labelling (TUNEL).

**Methods:** Paraffin sections of 85 supratentorial gliomas including 17 astrocytomas (A), 7 anaplastic astrocytomas (AA), 48 glioblastomas (GBM), 6 oligodendrogliomas (O) and 7 anaplastic oligodendrogliomas (AO) were reacted with MIB-1 and TUNEL. LI were calculated counting labelled nuclei and total tumour cell nuclei. MIB-1 LI and TUNEL-LI were related to histology.

**Results:** Mean MIB-LI were as follows: A = 0.07, AA = 0.31, GBM = 0.25, O = 0.25, AO = 0.27. Mean TUNEL-LI were as follows A = 0.003, AA = 0.047, GBM = 0.018, O = 0.02, AO = 0.023. MIB1-LI and TUNEL-LI were significantly different between A and all other histological groups ($p < 0.05$ Mann-Whitney). No significant difference was found in MIB-LI and/or TUNEL-LI between AA and GBM, O and AO or GBM and O. No significant correlation was found between MIB-1 index and TUNEL index ($p = 0.17$).

**Conclusion:** Astrocytomas were characterized by low MIB1-LI and low TUNEL-LI values. Anaplastic astrocytomas have a higher proliferation rate and apoptotic rate and did not differ from glioblastomas. Oligodendrogliomas showed a high proliferation rate and an apoptotic rate equivalent to high grade gliomas.

913 POSTER

## Estereotactic, linear acelerator based radiosurgery for brain metastases

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**Purpose:** To describe technique and results of radiosurgery (RS) in patients with brain metastases.

**Methods and Material:** From Aug 91 to Jun 96, 96 patients with 208 brain metastases were treated with RS (single intracranial lesions 51%). The predominat primary tumor was lung cancer 45 (51%). RS alone was the only component of cranial treatment in 58 cases. Median target volume size was 2157 mm3 (range 62–55968 mm3) Single isocenter was employed in 162 cases (77%). Median RS dose was 1247 cGy (range 900–2000 cGy). Most frequent isodose line selected for dose prescription was 90 (58% cases).

**Results:** Median survival time for the entire group is 10 months (62% of patients are dead at the time of analysis). Local control in the RS treated areas is projected 76% at 2 years. Actuarial 5 years survival is 23% for the entire group (28% single and 19% multiple lesions).

**Conclusions:** RS is able to induce high local control rates in brain metastases patients, both as definitive radiotherapy modality or combined with whole brain irradiation. Multifactorial prognostic variable analysis and updated results will be presented.

914 POSTER

## Improved survival using fractionated stereotactic radiosurgery (FSR) and concurrent taxol (T) for recurrent glioblastoma multiforme (RGM)

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**Purpose:** FSR/T was compared to single fraction radiosurgery (SFR) for RGM.

**Method:** 38 patients (pts) with RGM received 4 fractions FSR/T. Characteristics: tumor volume 3.1–150.3 cc (mean 48.2), FSR dose 450–900 cGy (mean 617.1); Taxol was administered in escalating doses from 80–160 mg/m2; Karnofsky Performance Status (KPS) ranged 50–100 (mean 69.2).

Retrospective analysis of 18 pts treated with SFR was performed. Characteristics: tumor volume 4.1–127 cc (mean 29.4); dose 900–2500 cGy (mean 1816.7); KPS was 50–100 (mean 73.9) with median survival 5.5 months. 21 pts evaluated with tumor volume <30 cc, 12 received FSR/T.

**Characteristics:** tumor volume 3.1–29.0 (mean 13.5) receiving 450–900 cGy (mean 620.8) weekly times 4; KPS 50–90 (mean 72.5). Compared to 9 pts receiving SFR with tumor volume of 4.1–21.9 cc (mean 11.2), receiving 900–2500 cGy (mean 1922.2); KPS 50–100 (mean 73.3).

**Results:** The overall 15-month survival for the FSR/T group was 37% compared to 6% in the SFR group. Analysis revealed improved survival for RGM pts with tumor volume of <30 cc receiving FSR/T of 58% compared to 11% in SFR at 15 months ($P = 0.05$).

**Conclusion:** Survival rates for RGM measuring <30 cc treated with FSR/T are significantly improved compared to SFR. This should encourage treatment approaches using FSR and radiation sensitizers to improve outcome.

915 POSTER

## Retrospective analysis of 30 intracranial ependymoma

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**Purpose:** To analyze of prognostic criteria and recurrences pattern in patients with cranial ependymoma treated by postoperative radiotherapy.

**Methods and Materials:** Thirty patients with intracranial epandymoma were evaluated retrospectively. Their mean age was 18 years. Male/female ratio was 1. Tumor localization was infratentorial in 15 patients, supratentorial in 15 patients. Surgery was performed in 29 patients, only in one patient biopsy was performed. Postoperative radiotherapy was underwent as a primary treatment in 25 patients and salvage treatment (after relapse) in the remaining 5 patients. Radiation doses were between 4500–6000 cGy. Radiation field was local (n = 17), total cranium (n = 12), craniospinal (n = 1). Median follow-up is 41 (3–144) months.

**Results:** Three, 5 and 10 year survival rates were 63.5%, 42.45, 42.4% respectively. There were 12 relapses (Primary tumor localization: 11patients and both primary tumor and cerebrospinal fluid: 1 patient). Median Relapse time was 27 (7–60) months. The effect of localization, grade, diameter, age, type of surgery, radiation field and dose on prognosis were studied

**Conclusion:** The grade ($p = 0.003$) and the diameter of the tumour ($p = 0.05$) was found statistically significant effect on prognosis.

916 POSTER

## Is there a role of 3-dimensional conformal boost for the treatment of medulloblastoma?

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**Purpose:** High-dose radiotherapy alone or in combination with chemotherapy may improve frequency and pattern of relapse in medulloblastoma patients. Combined treatment however maybe associated with clinically significant hearing impairment.

**Methods:** A total of 30 patients suffering for medulloblastoma (median age 10.2; 2.1–51.3; treated between 1982 and 1996) were enrolled in a retrospective evaluation. 14 patients had craniospinal irradiation after surgery of the primary, 16 were treated with stereotactic radiosurgery for recurrent disease after definitive radiotherapy. FFTF was 60% in the primary situation, median survival after radiotherapy of the recurrent disease was 22