radiotherapy (3D-CRT) techniques and compared with IMRT plans. The 3D-CRT plans were prepared using 3-4 fields and IMRT plans consisted of 7-8 fields. The primary objective was to treat the planning target volume and to minimize the dose to organs at risk (OAR). Volumetric analysis, target coverage and conformity of prescribed doses were used in plan comparison.

Results: Treatment tolerance was very good in all patients. Only 12 patients needed steroids during treatment. Adjustment of the dose distribution to the target volume was improved and the critical structures were better spared in the IMRT plans than in 3D-CRT plans. For all patients the mean dose and the maximum dose to OAR were significantly reduced in IMRT plans. With respect to target volume, IMRT technique reduced the maximum dose while increasing the minimum dose, resulting in improved conformity. In same patients with tumors located very close to OAR it was possible to give 60 Gy for target volume with 3D-CRT technique because of not acceptable doses in OAR.

Conclusion: The IMRT technique combined with concurrent temozolomide is well tolerated and offers significant advantages comparing to 3D-CRT. Application of IMRT allows dose reduction at OAR without compromising target coverage.

EP-1131
Long-term follow-up and prognostic factors in low-grade glioma (WHO II) postoperatively irradiated.
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Purpose or Objective: There is little consensus about the optimal treatment for low-grade glioma (LGG), and the clinical management of LGG is one of the most controversial areas in neurooncology. Radiation therapy is one option for treatment of patients with LGG whereas other options include postoperative observation. The aim of the study is to report the long-term follow-up of a cohort of adult patients with LGG post-operatively irradiated in one institution, and to identify prognostic factors for progression free survival.

Material and Methods: Between 1975 and 2005, 180 patients with LGG (WHO II) received postoperative irradiation after non radical (subtotal or partial) excision. Patients had to be 18 years of age or older, and have histologic proof of supratentorial fibrillary (FA), protoplasmic (PA) or gemistocytic astrocytoma (GA). Radiotherapy was given within 3 to 10 weeks after surgery. The treatment fields were localized and included the preoperative tumor volume, with a 1-2 cm margin, treated to a total dose of 50 to 60 Gy in 25 to 30 fractions over 5 to 6 weeks.

Results: Actuarial ten-year progression free survival (APFS) in the whole group was 19%. The worse prognosis was reserved for patients with GA. Ten-year APFS rates for GA, PA and FA were 10%, 18% and 22% respectively.

Conclusion: The findings from our long-term cohort of 180 patients with LGG confirmed by uni- and multivariate analysis demonstrated that only astrocytoma histology significantly determined the prognosis. The best survival is reserved for patients with the fibrillary variant, and the worst for the gemistocytic one.

EP-1134
Proton therapy re-irradiation for large-volume recurrent high-grade gliomas
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Purpose or Objective: To report preliminary results of re-irradiation with proton therapy (PT) for large-volume recurrent high-grade gliomas (rHGG).

Material and Methods: Between January and September 2015 eight patients (pts) with rHGG (7 glioblastoma - GBM, 1 anaplastic oligodendroglioma - AOD) were re-irradiated with PT. Age at re-irradiation was between 40 and 64 years while Karnofsky performance status was 60-100%. Minimum time between prior radiotherapy and PT was 8 months. Target definition was based on CT, MR, and 18F-DOPA PET imaging. GTV included any area of contrast enhancement at MR imaging after contrast medium administration plus any uptake regions at PET imaging. CTV was generated by adding to GTV a 3-mm uniform margin manually corrected in proximity of anatomical barriers. CTV was expanded by 4 mm to create PTV. PTV volume varied between 55 and 260 cc. The patient with AOD received 50.4 GyRBE in 28 fractions (fx) while GBM pts 36 GyRBE in 18 fx. Four GBM pts also received concomitant temozolomide (75 mg/m2/day, 7 days/week). All pts were treated with active beam scanning PT using 2-3 fields with single field optimization technique.

Results: All pts completed the treatment without breaks. Registered acute side effects (according to Common Terminology Criteria for Adverse Events versione 4.0) include skin erythema with pruritus, alopecia, fatigue, conjunctivitis, and headache. All the side effects were grade 1 or 2. There were no grade 3 or higher toxicities. One patient developed grade 1 neutropenia. Three pts started PT under steroids (2-8 mg/day); two of them reduced the dose during PT, one kept the same steroids dose. None of remaining pts needed steroids therapy. During follow-up two pts developed radionecrosis (diagnosed at imaging) with mild symptoms controlled with steroids. All pts are alive. Four pts have stable disease one months after PT, three pts have stable disease three months after PT, and one pts progressed five months after PT.

Conclusion: PT re-irradiation of large volume rHGG is feasible and safe even with concomitant chemotherapy administration. Longer follow-up is necessary to assess definitive efficacy.

EP-1135
Hypofractionated Stereotactic Radiation Therapy for cavernous sinus meningiomas
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Purpose or Objective: We evaluate the tolerance and efficiency of robotic hypo fractionated stereotactic radiotherapy (hSRT) for patients with Cavernous sinus meningiomas in our Institution.

Material and Methods: We retrospectively reviewed patients who were treated with robotic hSRT for Cavernous sinus meningioma. Multidisciplinary staff approved treatment. A dose of 36 Gy was prescribed in 9 fractions. Treatment was delivered every other day.

Results: Between 2010 and 2013, 18 evaluable patients with a total 18 lesions were treated in our institution with hSRT
with median follow up of 18 months (6-40 months). Six patients had prior surgical resection of tumor, 12 received treatment as first line. The majority (60 %) of lesions were close to the optic pathway with median values for GTV volume was 9.4 cm³ (0.38-55.66 cm³). The control rates at tow years were favorable with stable disease in 100 % patients, vision was preserved and improved symptoms in 65% patients. We observed no grade 3 or 4 toxicity. The most frequent being grade 1 retro-orbital pain (20%). No late toxicity was reported and no death during the follow - up period.

Conclusion: Robotic Hypo-fractionated stereotactic radiotherapy for Cavernous sinus meningioma is feasible and provides a satisfactory local control with acceptable tolerance, either as a first line treatment or as adjuvant to incomplete surgery or relapse. Although this type of tumor has a slow evolution, extended follow-up is mandatory.

**EP-1136**

**Treatment with radiosurgery (stereotactic radiotherapy) in single session in brain metastases**

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**Purpose or Objective:** Until the advent of stereotactic radiotherapy, the main treatment option consisted of cranial radiation for palliation. With a more radical intent, and only in selected patients, surgical resection and adjuvant radiotherapy was indicated later. The purpose of this study is to evaluate the results obtained after treatment with single-session radiosurgery.

**Material and Methods:** Between 2002 and 2014, has collected a representative sample of 592 patients with histological diagnosis of brain metastases, of which 340 were men and 252 women. The average age in this group was 55.67 years (14-82 years) and with a KPS of 90 in 58.3% of patients. The most common location of these was lung 51%, followed by breast cancer 17.1% and prostate cancer 15.7%. The most frequent pathological study adenocarcinoma was 23.5%, followed by squamous 10.6%. In most 63.2% no surgery was performed. The most common site of these was lung 51%, followed by breast cancer 17.1% and prostate cancer 15.7%

**Results:** With a median follow-up of 7 months, median survival was 14.23 months in a range of 0-117 months. In terms of toxicity, only 3.5% of the presented radiation necrosis (21 patients), while the cerebral edema was reported in 10.8% (64 patients).

**Conclusion:** The single session radiosurgery is a conservative but with a radical purpose, offering technical and few side effects is very convenient for the patient.

**EP-1137**

**Volumetric Modulated Arc Therapy (VMAT) and simultaneous boost for brain metastases patients**

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**Purpose or Objective:** To access treatment toxicity and patients’ survival after Volumetric Modulated Arc Therapy, a novel rotational Intensity Modulated RadioTherapy (IMRT) technique, with Simultaneous in-field Boost (SIB) for patients with brain metastases.

**Material and Methods:** Between November 2010 and March 2015, 26 patients with 1-3 brain metastases were treated with SIB-IMRT in the Department of Radiation Oncology at V. Fazzi Hospital (maximum diameter of largest metastasis 3 cm, KPS ≥ 70, RPA < III). Mean age was 61 ± 7.5 years. Patients were neurologically stable. Extracranial disease well-controlled (6-month estimated median life expectancy). Patients will undergo contrast-enhanced TC scan of the brain for radiotherapy planning purposes. The macroscopic (gross) tumor volume (GTV) was drawn on the MRI images. The prescription isodose line was generally 3 mm larger than the GTV. Patients will be treated with WBR/T/SIB using VMAT, delivering a total of 30 Gy in 10 fractions to the whole brain and SIB doses to brain metastases were 40 Gy to lesions >or= 2.0 cm and 50 Gy to lesions <2.0 cm in diameter, delivered once daily on working days. Following therapy completion, patients will be seen every 3 months for the 1st year, then every 6 months thereafter. Patients will have MRI brain at 3 months and 1 year, and every 6 months after the first year. Any toxicity was recorded according to the RTOG.

**Results:** The median follow-up interval was 9 months (range, 2 months-16 months). The median overall survival time was 11 months, and 3 of patients died of disease progression. The 6-month overall survival was 91%. After SIB-IMRT treatment of 42 brain lesions, 35 lesions demonstrated complete responses, 5 lesions demonstrated partial responses, 2 lesion demonstrated stable disease. Actuarial local tumor control rates at 6 months, 1 year and 2 years were 93.9, 82% and 54%, respectively. Thirty-eight patients did not have any adverse events vgradeda. The majority of common adverse events were grade 2 headaches (4 patients), grade 2 motor neuropathy (2 patients), and grade 2 lethargy (2 patient). One patient developed a grade 3 headache 5 months after receiving SIB-IMRT.

**Conclusion:** The delivery of 40/50 Gy in 10 fractions to 1 -3 BM using VMAT provides a high level of tumor control with minimal toxicity. Therefore, we believe there is a need for a larger prospective study to establish dosing guidelines for SIB-IMRT and to pave the way for a randomized trial to compare SRS/STS plus WBRT with this approach.

**Electronic Poster:** Clinical track: Haematology

**EP-1138**

**Evolution of radiation techniques in the treatment of mediastinal lymphomas: single center experience**

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**Purpose or Objective:** To evaluate radiation techniques in the treatment of Hodgkin’s Lymphoma (HL) and Non-Hodgkin’s Lymphoma (NHL) with mediastinal disease over 10-year period, and the toxicity.

**Material and Methods:** Between 2003-2015, 173 patients (pts) with stage I-III nodal lymphoma were treated in our institution: some of these patients were irradiated for HL or NHL with mediastinal disease. Some of the patients were treated by 3DCRT, others by IMRT

**Results:** We studied 26 men and 43 women with a median age of 26 years. The median follow-up was 43 months. Forty nine pts were treated by 3DCRT and 20 pts by IMRT. The median dose received by patients treated for NHL was 40 Gy (range: 36-44 Gy) and the median dose received by pts with HL was 30 Gy (range: 30-36 Gy). Between 2003-2006, 16 pts were treated by 3DCRT vs. 0 by IMRT. Between 2007-2009, 16 pts received 3DCRT and 1-IMRT. Between 2010-2015, 19 pts received IMRT, and no patients 3DCRT. Eleven of the 20 patients (55%) treated by IMRT and 35/49 pts (71.4%) treated by 3DCRT experienced acute toxicity. Among the patients treated by 3DCRT, 1 patient experienced grade 1 radiation pneumonitis and 2 patients experienced grade 1 acute mucositis. No late toxicity was observed in the patients treated by IMRT.

**Conclusion:** Improvement of radiation techniques for HL and NHL appears to have improved acute and late clinical safety. Longer follow-up is necessary to evaluate very late toxicity.