fusion. The treatment was designed with SmartArc with multiple arches made with Synergy. The dosage regimen used is Lagerwaard one: [RCT (20 Gy) + SIBmts (40 Gy)] / 5 frac. Positioning of the patient was checked daily with conebeam. Before starting the optimization we must be contoured 3mm ring around the calote we call follicles, and a contraction of the outer contour of 12mm we call volume CPE. We define two arcs (VMAT CCW 178 ° -60 ° and 300 ° -182 °), with the following objectives: follicles (DSEmax = 16 Gy, weight = 20; DSEmax = 5 Gy, weight = 1), brain-CPE (Dmax = 21Gy, weight = 100 and Dmin = 20 Gy, weight = 50), eyes (Dmax = 10 Gy, weight = 1). Later, we focus on separate metastases: optimization blocked prophylaxis (Optimization Type None) and create three structures: VI1 = PTV (MTS1) 5 mm VI2 = PTV (m2) 5 mm Epx = brain-VI1-VI2 . The objectives were PTVI (Dmax = 44Gy, despite Dmin = 100 and = 40 Gy weight = 50), Epx (Dmax = 30 Gy) and brainstem (Dmax = 23Gy), follicles (DSEmax = 16 Gy, weight = 20 ; DSEmax = 5 Gy, weight = 1)
Verifying treatment was performed with the Compass software, and the Matrixx detector with gamma (4%, 1 mm) conditioning.

Results: So far we have treated 15 patients, the differences in the images of fusion of less than 1 mm and the average correction IGRT of 1.24mm. No acute toxicity. Nor alopecia, or temporary removal,

Conclusion: If we consider our VMAT optimization alopecia in WBRT + SIB with eXaFrame and eXaSkin, produce optimal aesthetic results.

EP-1131
Hypofractionated Radiotherapy with temozolomide in poor prognosis glioma: a retrospective study
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Purpose or Objective: To describe clinical outcomes of hypofractionated radiotherapy, either in combination or not with temozolomide (TMZ) in poor performance status glioblastoma (GBM) patients

Material and Methods: We retrieved the charts of 96 patients treated with hypofractionated radiotherapy plus/minus TMZ for GBM at our Institution

Results: Patients characteristics were summarized in Table 1.

Variables	N (%)
Total	96
Gender	
Female	41 (42,7%)
Male	55 (57,3%)
Age at diagnosis (years)	
Median	66
Range	25-81
≥ 65	53 (55.2%)
KPS at presentation	
< 70	26 (27.1%)
≥ 70	70 (72.9%)
Extent of surgical resection	
Gross total resection	4 (4.2%)
Partial resection	66 (68.8%)
Biopsy	26 (27.1%)
Type of adjuvant treatment	
Short-course radiotherapy alone	57 (59.4%)
Short-course RT plus concomitant TMZ	7 (7.3%)
Short-course RT plus concurrent and adjuvant TMZ	12 (12.5%)
Short-course RT followed by adjuvant TMZ	20 (20.8%)
Patients on corticosteroids	
Yes	16 (16.7%)
No	80 (83.3%)

Among elderly patients, 38 (71.6%) were treated with RT alone, 9 patients (16.9%) with adjuvant TMZ, while 6 patients (11.3%) with a KPS ≥70 received hypoRT plus concurrent TMZ, followed by adjuvant chemotherapy in 3 (5.6%) of these cases. The median follow up time of the entire cohort was 13.6 months (range 1-47 months). A significant improvement in KPS from baseline to the end of radiation therapy was observed in 73 patients (76%). The median overall survival time was 6.7 months, reducing to only 2.5 months and 4 months respectively in elderly and younger patients with low performance status (KPS<70). The 6 months and 1 year survival rates were respectively 56.4% and 29.1%. In multivariate analysis, concomitant Temozolomide (HR:0.38, 95% CI 0.16-0.85,*p=.020*) and adjuvant TMZ (HR:0.28,95% CI 0.14-0.56,*p=.000*) emerged as significant indices of longer OS rates, while weaning from steroids (*p=.18*), extent of surgical resection (*p=.17*) and tumor site (*p=.10*) were not significant predictors of overall survival but showed a positive trend. Patients who received concomitant TMZ had a median survival time of 12.5 months compared with 6.3 months for those treated with RT alone (*p=.017*). Also the use of adjuvant chemotherapy resulted in improved survival compared to no sequential Temozolomide (10.8 *vs* 5.2 months, *p=.001*). In the elderly cohort, patients treated with adjuvant TMZ had median OS of 8.15 months as opposed to 6.4 months of those not receiving adjuvant chemotherapy (*p=.001*). A stronger impact of adjuvant TMZ has been reported in younger patients, with a median OS of 13.5 months in adjuvant TMZ group compared to 3.7 months (*p=.001*) in the other group. Moreover, younger patients receiving concurrent Temozolomide showed a significantly longer OS of 20 months compared to 5.1 months in patients not having TMZ (*p=.006*). Acute tolerance to radiotherapy was generally good. No grade 3-4 acute toxicity was observed.

Conclusion: Our findings seem to suggest that frail elderly patients with KPS at baseline < 70 do not benefit of an active treatment and could be carefully offered best supportive care. In the presence of a good functional status and a wide surgical resection, patients older than 65 years may take advantage of hypo-fractionated radiotherapy, followed by adjuvant TMZ. In younger patients with poor performance status, the significant survival gains obtained with combined modality treatment suggest that a maximum resection followed by combined radiation and chemotherapy should be recommended.

EP-1132
Application of IMRT technique in treatment of malignant gliomas: assessment of treatment tolerance
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Purpose or Objective: Assessment of tolerance of combined modality therapy of patients with malignant gliomas irradiated using IMRT technique. We compared dose distribution in IMRT and conformal 3D treatment plans.

Material and Methods: Between 2009 and 2013 in the Oncology Center in Krakow 60 patients with malignant gliomas received combined modality treatment. Mean age was 53 years (range 24–72 years). All patients were in good performance status (WHO 0–1). There were 48 patients with glioblastoma multiforme and 12 with anaplastic astrycytoma. 48 patients underwent complete resection and 12 partial resection. Patient were irradiated using IMRT technique with a total dose of 60Gy in 30 fractions. All patients concurrently received temozolamide in the dose of 75mg/m2. In all patients we performed additional plans using 3D conformal

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 impossible to give 60Gy for target volume with 3D-CRT technique because of not acceptable doses in OAR.

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

EP-1133

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

Hypofractioned 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