registry study for children ("KiProReg") at WPE. Initial findings are presented.

Material and Methods: Between September 2013 and September 2015, data on 138 children (78 males, 60 females, aged 0.9-17.9 years (median 5.7 years)) were prospectively collected in KiProReg at WPE. Diagnoses were CNS tumours (n=73), sarcomas (n=59), extracranial germ cell tumors (n=3) and others (n=3), respectively. Treatment sites were brain (n=72), head and neck including base of skull (n=38), spine (n=15), or pelvis (n=13). In 73.9% of the patients, macroscopic residual disease was present before PT. The median total dose of PT was 54.0 Gy (range 29.8-74.0 Gy). Only two patients had a mixed beam technique. Due to the very young age, sedation was necessary in 55.1% of children. Concurrent chemotherapy was applied in 54.3% of children. Side-effects were classified according to Common Terminology Criteria for Adverse Events (CTCAE) V4.0 grading system.

Results: Median follow-up (FU) since first diagnosis was 1.2 years (range 0.3-16.3 years). PT was well tolerated. No or only mild to moderate acute side-effects (grade 1 to 2) were documented in the majority of children (n=116). During PT, acute grade 3 side-effects were observed for blood/bone marrow (n=21), gastrointestinal (n=8) or as general disorders (n=3) as well as anorexia (n=1) when compared to baseline. Acute grade 4 side-effects during PT were only seen for blood/bone marrow (n=9). In 77 children, information on toxicity three months after PT is available. Only five patients presented with grade 3 or 4 toxicities, predominantly for blood/bone marrow (grade 3 n=7, grade 4 n=2). Seven of them had received chemotherapy after PT. So far, 17 patients failed due to recurrence or progression (local n=5; systemic n=12). Six of them (4.3%) have died so far, all due to disease.

Conclusion: Initial prospective data from WPE registry suggest good feasibility with only mild or moderate side-effects in the majority of children even when administering high doses at critical sites. Higher-grade side-effects primary for blood and bone marrow are obviously influenced by concurrent chemotherapy. Early local control rates achieved with PT are promising so far. However, longer FU is needed to analyze long-term outcome and late effects.

OC-0249
Five-year clinical outcomes after dose-escalated image-guided proton therapy for prostate cancer
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Purpose or Objective: To report clinical outcomes for patients treated with image-guided proton therapy for localized prostate cancer.

Material and Methods: Under institutional review board approval, the medical records of 1,215 men enrolled either on a prospective protocol or an outcomes tracking study treated for localized prostate cancer with proton therapy at our institution between 2006 and 2010 were reviewed. Ninety-eight percent of patients received 78 Gy (RBE) or higher; 15% received androgen deprivation therapy (ADT). Five-year freedom from biochemical progression (FFBP), distant metastasis-free survival, and cause-specific survival rates are reported for each risk group. Prospectively collected patient-reported quality-of-life data and high-grade toxicities are reported. A multivariate analysis was performed to identify clinical predictors of biochemical failure.

Results: The median follow-up was 5.5 years. The 5-year FFBP rates were 99%, 94%, and 74% in low-, intermediate-, and high-risk patients, respectively. Actuarial 5-year rates of late grade 3 gastrointestinal and genitourinary toxicity were 0.6% and 2.4%, respectively. Median International Prostate Symptom Scores (IPSS) before treatment and at +4 years after treatment were 7 and 7. Median changes in EPIC scores between baseline and 4+ years of follow-up were minimal in the bowel, urinary irritative/obstructive, and urinary incontinence summary domains.

Conclusion: Image-guided proton therapy provided excellent biochemical control rates for patients with localized prostate cancer. Patient-reported quality of life outcomes are favorable and actuarial rates of high-grade toxicity were low following proton therapy.

OC-0250
Hadrontherapy as re-irradiation using active beam delivery at CNAO
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Purpose or Objective: Re-irradiation of non resectable local recurrence, after previous full course of radiotherapy, is extremely challenging. Particle therapy may theoretically be the ideal tool for re-irradiation thanks to its complete sparing of large volumes of normal target tissues. Previous re-irradiation with low-medium dose with conformal X-ray based techniques. We report CNAO experience, in terms of acute toxicity and early response to hadrontherapy, in patients with head and neck, skull-base and sacral local relapse, re-irradiated with carbon ions or protons.

Material and Methods: Since February 2013 to February 2015, 70 patients (M/F = 41/29) underwent hadrontherapy in CNAO as re-irradiation. Site of disease was head and neck in 52 patients cancer, sacrum in 12 patients, skull-base in 4 patients and brain in 2 cases. The histologies were: squamous cell carcinoma (21 pts), adenoid cystic carcinoma (18 pts), chordoma (7 pts), other sarcoma (6 pts), adenoacarcinoma (7 pts), meningioma (4 pts), others (7 pts). Sixty-two patients had been treated with Carbon ions, the rest (8 pts) with protons. Average age was 59 (range 31 – 78). Previous radiotherapy doses ranged between 54 to 76 Gy (with conventional fractionation) and 20 to 28 Gy (with hypofractionation). Mean prescription dose was 61.7 Gy [RBE] (32.5 - 64), mean dose per fraction was 2.4 Gy [RBE] (2 - 4.5). Early toxicity was evaluated during, at the end and within 90 days after radiotherapy (RT). Patients were also followed up for late toxicity and radiologic response every three months after RT with magnetic resonance (MRI) and clinical evaluation.

Results: Acute toxicity was mild with no G4 event. At the end of treatment 26 pts (37%) had G0 toxicity; 27 pts (38%) had G1 toxicity; 16 pts (23%) had G2 toxicity and only 1 pts (1%) had G3 mucositis. At three months this favorable profile was maintained; FU average 9 months (range 3 – 24 ). Only one patient had G4 toxicity detected at 3 months (united to blindness due to intentional irradiation of one optic nerve beyond tolerance dose). Only 3 patients had G3 toxicity: skin fistula and osteoradionecrosis, 6 months after RT and cerebral edema (requiring medical treatment) 9 months after RT. The patient with longest FU (24 months), has late toxicity G1 (hearing impairment). At the time of analysis 11 patients had died of progressing disease (PD), 6 and 9 months progression free survival were 83% and 72% respectively.

Conclusion: Hadrontherapy as reirradiation allows good dose distribution with optimal sparing of already irradiated organs at risk. Due to mild acute toxicity hadrontherapy may be considered safe and well toleratred. Longer follow up is needed to confirm the efficacy and the late side effects.