Purpose/Objective: To evaluate feasibility in a multicentric setting and clinical results of a RT boost for children with Ependymoma and measurable residual disease after first line or second look surgery.

Materials and Methods: The second AIEOP (Italian Association of Pediatric Hematology and Oncology) protocol for childhood ependymoma opened in 2003. After centralized pathological review, children were stratified to receive: 1) 3D conformal RT or IMRT, 59.4 Gy/33 fractions, to the tumor bed in case of complete resection and grade II tumor; 2) the same RT followed by four cycles of VEC chemotherapy in case of complete resection and anaplastic ependymoma; 3) VECx4, another 3D conformal RT for patients with measurable residue after previous irradiation, followed by a stereotactic hypofractionated (8 Gy/2 fractions) boost to the residue still measurable after previous treatments.

Results: From 2003, 143 children entered the study (median follow-up 60 months). In 24 children (median age 4.5 years, 15 grade II, 20 infratentorial), out of 46 with residue after first surgery, second look wasn’t feasible or incomplete and thus received VEC and 59.4 Gy to the tumor bed plus 8 Gy to the gross residue. 15/24 children were alive without progression at a median of 51 months (range 11-120 mos), 5/6 died of local progression at a median of 20 months, and 3 relapsed distantly, 17-23 months from diagnosis, and have died. No iatrogenic death or major toxicity occurred. 4 children, irradiated with Tomotherapy, developed radiation related MRI changes regressing with steroids within 8 months. In the 46 children with residual disease, 3 and 5 years PFS was 64% and 55%, and OS 80% and 68% respectively. 3 and 5-year survival free from local relapse was 71% and 64% respectively. 5 year-EFS for children receiving the RT boost was 57%.

Conclusions: Hypofractionated RT boost was feasible and contributed to obtain durable local control in 15/24 children with measurable residue after first line or second look surgery. An aggressive and integrated local treatment strategy, multiple surgeries and RT including an hypofractionated boost in case of residual disease, is required to improve outcome in children with Ependymoma.

This background will be the basis of the next opening SIOP (Société International d’Oncologie Pediatrique) trial for Ependymoma.
A compelling body of non-randomized evidence has showed that SBRT is a safe and efficient way to control multiple metastatic sites. However, when treating metastatic patients (even if “oligometastatic”), selection criteria are a pivotal issue. In general, clinical indications are the same as those for metastasectomy (pulmonary and/or liver metastasectomy), but without the limits regarding patients unfit for surgery.

Current literature has showed promising long-term survival outcomes after SBRT for limited metastases. Future studies are, and will be, addressing: 1) what (if any) benefit SBRT (and other local therapies) should offer for patients with limited metastases, 2) which patients are most likely to benefit from SBRT (host-related factors underlying the oligometastatic state, i.e. miRNA), 3) optimal dose and fractionation schedules, 4) what radiobiologic mechanisms are relevant in the treatment of the target tumor (i.e., SBRT as “immunomodulator”).

SP-0313
SABR versus surgery in extracranial oligometastatic disease: (lung, liver other sites)
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Standard treatment of metastatic cancer is systemic therapies. Local treatments for oligometastatic patients may have significant role since a large majority of patients treated with systemic chemotherapy experience progression mostly in initial sites of tumor burden rather than new sites of progression. Surgical excision of metastatic sites usually from liver and lung that have been shown to prolong survival in colorectal cancer, sarcomas, melanoma, breast cancer and many other tumor types.

Currently surgery is considered to be standard approach for these groups of patients. Surgical series of hepatic metastasectomy of primary colorectal cancer resulted 18-51 % 5-year survival rate with 2-7% operative mortality and 6-13 % serious morbidity risk. Most of the metastasectomy data are based on single institutional series and had many confounding factors such as patient selection that cause some doubts about the results. It should also be considered that many tumors are inoperable due to tumor location or medical inoperability of the patient.

Stereotactic treatment was developed by a neurosurgeon Lars Leksell to treat inoperable deeply seated lesions in the brain. SABR recently become popular to extra-cranial sites with technological improvements. Its strengths include high rates of tumor eradication via non-invasive, convenient, short outpatient treatment course, favorable toxicity and no recovery time. It yielded very good results for treatment of primary and metastatic tumors in various body sites in properly selected patients. However despite potential advantages, there are few published retrospective or phase II studies with limited patient number. These studies about metastatic liver disease that have been treated with SABR yielded 70-82 % 2-year local control rate without any serious toxicity. So there is great hope that SABR may find prominent place in treatment of metastatic cancer. There are also few literature data with favorable results on lung, adrenal, lymph node metastasis treated with SABR.

There is no randomized study comparing efficacy and toxicity of surgery and SABR in oligometastatic setting. Many authors consider surgery as the standard treatment for local management of metastatic sites. However, SABR is promising approach as a complementary or alternative regimen to surgery. Until well-designed randomized studies comparing these two regimens, selection of treatment should be individualized to the patient with the guidance of available data.

Individualization of treatment is dependent on patient factors and metastatic sites. Performance status, comorbidities of the patient, location and number of metastatic sites, previous treatments, underlying prognosis, tumor biology and experience of the team are all important factors for consideration of local treatment.

OC-0314
Can SBRT be a viable therapeutic option for unresectable pancreatic adenocarcinoma? Results of phase II study
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Purpose/Objective: To assess the safety and efficacy of stereotactic body radiotherapy (SBRT) in patients affected by inoperable locally advanced pancreatic adenocarcinoma and local recurrence after surgery.

Materials and Methods: Patients with unresectable locally advanced tumor or local recurrence disease were treated with exclusive SBRT. All cases were evaluated by multidisciplinary team. Irradiated lesions had a diameter less than 5 cm and no metastatic disease was present at the time of SBRT. Prescription dose was 45 Gy in 6 daily fractions of 7.5 Gy. SBRT was delivered using the volumetric modulated arc therapy (VMAT) by RapidArc technique. Primary end-point was freedom from local progressions (FFLP) and secondary end-points were overall survival (OS) and toxicity. Local control was defined according to RECIST criteria. Acute and late toxicity was scored according to the NCI Common Terminology Criteria for Adverse Events (CTCAE) v3.0.

Results: Between January 2010 and October 2012, 62 patients were treated. Forty five patients (74%) had unresectable locally advanced disease and 17 patients (26%) had local recurrence after surgery. Median follow-up was 12 months (3 - 48 months). Nineteen (30%) patients were alive at the time of analysis. Median follow-up was 17 months in this group of patients (range 12-48 months). In patients with inoperable locally advanced disease, FFLP was 90% at 1year.

Median progression free-survival was 8 months. Median OS was 13 months, with 1-year OS rate of 51%. Ca 19.9 value increased in 28 cases (62% of this subgroup) and Ca 19.9 value was less than 300 U/ml in 12 patients (43%) while it was more than 300 U/ml in 16 patients (57%). Univariate analysis showed that Ca 19.9 < 300 U/ml was closely correlated (p = .055) to a better OS. In those patients with local recurrence after surgery, FFLP was 85% at median follow-up. Median progression free-survival was 9 months. Median OS was 19 months, with 1-year OS rate of 53%. In all the cases, toxicity rates were satisfactory with no patients who experienced acute grade 3 toxicity or greater.

Conclusions: SBRT is a safe and efficacy treatment to improve local control in patients with unresectable locally advanced or recurrence pancreatic adenocarcinoma, in absence of grade 3 toxicity or greater. Our results suggest that SBRT may be a promising therapeutic option in the multi-modality treatment of these patients.

OC-0315