P13.02. PROTON THERAPY FOR BRAIN AND SKULL BASE TUMORS AT THE NEW OPENING TRENTO FACILITY
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BACKGROUND: Thanks to their distinct physical properties proton therapy (PT) offers a superior dose distribution than photon radiation therapy. For brain and skull base (SB) tumors such dose sparing can be harnessed: a) in benign tumors, to achieve long-term better quality of life and reduced risk of neurocognitive deficits as well as radiation-related malignancies by delivering standard dose level; b) in malignant tumors or malignancies with local aggressiveness, to improve local control by safe delivery of tumor dose escalation. In the following we report an overview on our facility and the neuro-oncology program. METHODS/RESULTS: The Trento facility is built on over an area that will host the new Trento Hospital so that it will be a hospital-based PT center. As opposed to most centers using PT in the past, our facility is equipped with active beam delivery employing the spot scanning technique. A cyclotron provides a library of pencil beams of variable energy (70 - 226 MeV) and spot size (or, 3 - 7 mm). Within the center, radiation therapy is offered in two treatment rooms. To allow for 360° rotation of the beamline these rooms are equipped with two gantries. In the treatment rooms, patients are placed on a robotic treatment table offering maximal variability and flexibility for patient positioning. The rooms are also equipped with devices enabling X-ray for treatment position verification. In a second step, the rooms will be equipped with cone-beam CT (room 1) and CT on-rails (room 2). Additionally there is one room equipped with horizontal beamline and equivalent beam scanning technology dedicated to quality assurance and preclinical research. For treatment planning imaging, the center is equipped with a dedicated CT and 1.5T MR. The staff is composed by professionals that experienced in leading particle centers in Villigen (CH), Heidelberg (GER), Boston (USA), Jacksonville (USA), Philadelphia (USA). Dedicated protocols for tumors of the brain and SB, for both adults and pediatric patients will be conducted based on the previous conducted trials on PT and potential expected benefit. As mentioned above, according to different clinical aims we are going to treat both benign and malignant tumors. The former group includes pituitary adenomas, schwannoma, benign meningioma, chondrosarcoma, cranopharyngioma, ependymoma, low-grade gliomas, medulloblastoma. In a second step, a PT radiosurgery program will be implemented for some of them. The latter group includes chordoma, high-grade gliomas, and atypical-malignant meningiomas. Regardless of the tumor type patients can be accepted also for re-irradiation. CONCLUSIONS: After a dedicated planning, construction and commissioning phase, patient treatment at Trento PT center is expected for summer 2014. Based on the already demonstrated as well as further potential clinical benefit neuro-oncology represents one of the most important field of interest.