VERO/MITSUBISHI BRAIN Lab RADIOTHERAPY: Case profile, feasibility and acute toxicity in consecutive 789 patients/957 lesions

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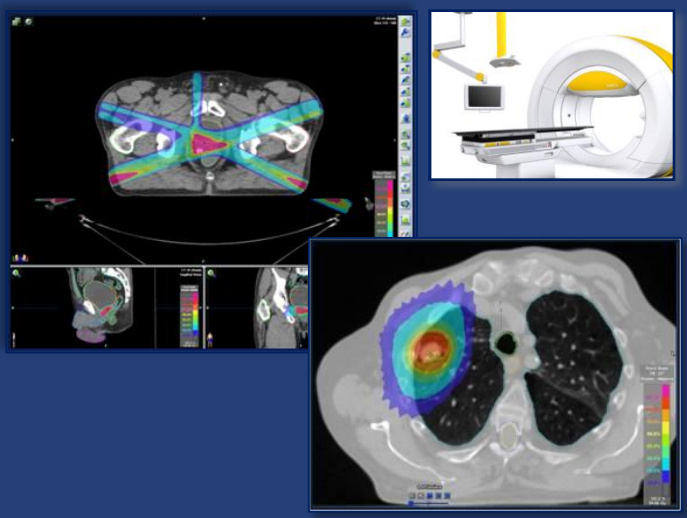
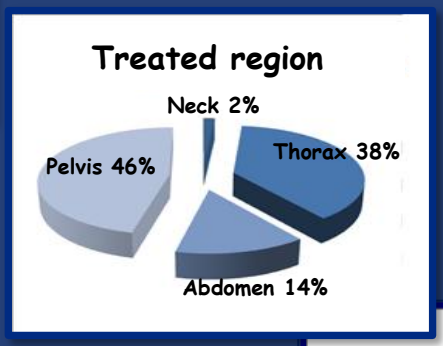
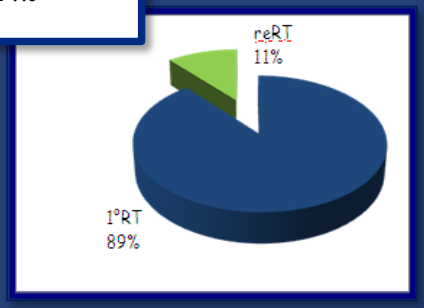
Introduction: VERO-radiotherapy (VERO-RT) was implemented in our department in 4/2012 and it was one of the first installations of this unique precise radiotherapy system over the world. The aim of this retrospective study is to evaluate patient profile, feasibility and acute toxicity of VERO-RT in the first 20 months of clinical activity.



Methods: Inclusion criteria: 1) adult patients; 2) limited volume cancer (M0 or oligometastatic); 3) VERO-RT between 4/2012 and 12/2013 and 5) written informed consent. Two techniques were employed: intensity modulated radiotherapy (IMRT) and stereotactic body radiotherapy (SBRT). Toxicity was evaluated using Radiation Therapy Oncology Group/European Organization for Research and Treatment of Cancer (RTOG/EORTC) and Common Terminology Criteria for Adverse Events (CTCAE) criteria.





Results: Between 4/2012 and 12/2013, 789 consecutive patients were treated (957 lesions): in 84% 1 lesion was treated, in 16% more than 1 lesion was treated synchronously/metachronously. Median age was 70y (20-91) male/female 541 (69%)/248 (31%). First radiotherapy in 85% , re-irradiation in 13% and boost in 2% of cases. Primary diagnosis included urology (354 patients, 45%), lung (176 patients, 22%), gastrointestinal (94 patients, 12%), breast (72 patients, 9%), gynecological (60 patients, 8%), head/neck (8 patients, 1%) and other malignancies (25 patients, 3%). The treated region included neck (13 lesions, 1%), thorax (363 lesions, 38%), upper abdomen (140 lesions, 15%), pelvis (441 lesions, 46%). T, N and M lesions were treated in 476 (50%), 139 (14%) and 342 (36%) patients, respectively. M category included bone, nodal and visceral metastases. VERO-RT schedules included < 5 and > 5 fractions (extreme and moderate hypofractionation) in 75% and 25%, respectively. All patients completed planned VERO-RT and only 2 cases of G4 acute toxicity was observed.

Conclusions: VERO-RT was administrated predominantly to pelvic and thoracic lesions (lung and urologic tumors) using hypofractionation. It is a feasible approach for limited burden cancer offering short and well accepted treatment with low acute toxicity profile. Further investigation including dose escalation and other available VERO-RT functions (tumor tracking) is warranted in order to fully evaluate this innovative radiotherapy system.

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