Early and Late Complications after High Dose Rate Brachytherapy of Intermediate and High-Risk Prostate Cancer

Introduction and Objective: We evaluated the early and late complications after High Dose Rate (HDR) brachytherapy procedures in treatment of prostate cancer based on single institution results.
Materials and Methods: Between May 2009 and December 2011, a total of 41 patients underwent HDR real time, ultrasound guided single insertion procedure for combined radiation therapy of intermediate and high risk prostate cancer. Mean patient age was 67 years (range 51 to 76). For the first 30 patients the prescribed single dose to the visible in real time whole prostate volume was 9.5 Gy. After evaluation of intermediate result the dose was safely escalated up to 11 Gy. On average 2 weeks after the procedure all patients underwent external beam intensity modulated radiation therapy (IMRT) prescribed to the prostate, seminal vesicles and pelvic limp nodes with the dose levels of 60 and 50 Gy respectively. All patients were hospitalized one day prior the procedure and stayed in ward on average 2 days after the procedure.
Results: Patients were evaluated 6 weeks after treatment completion, quarterly in the first year and half-yearly up to 5 years. The mean time of follow-up was 28 month. The side effects were evaluated according to RTOG/EORTC recommendations, including early complications: perineal pain, urinary retention, dysuria, cystitis, proctitis, haematoma and late complications: proctitis, incontinence,erectal dysfunction,urethral stricture. The check-list included: clinical examination, history, PSA, TRUS, record of treatment related disorders, IPSS and status of potency. Early, grade 1 or more toxicity was observed in 19% of patients (5 perineal pain, 2 haematospermia and 1 urinary retention). No grade 3 early either GI or GU toxicity was observed. Late grade 2 or more toxicity was observed in 26% of patients (3 urethral strictures, 2 cystitis, 1 incontinence, 6 proctitis, and 1 rectal ulceration). Some of patients developed multiple symptoms. 29% of patients developed erectile impotence. Toxicity rates were compared with representative group of prostate cancer patients which underwent IMRT treatments with no HDR bust at our institution.
Conclusions: HDR bust delivered as single dose fraction is optimal mean for dose escalation for intermediate/high risk patients. The higher equivalent delivered dose should result in better local tumor control. Acute toxicity is less than for the external beam RT alone. Late toxicity equivalent to external beam