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Salvage brachytherapy for local recurrences of prostate cancer

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Purpose: Radiation therapy for localized prostate cancer is a standard option of treatment. Local recurrences (biochemical and clinical) occurred in about 50% (depending on the initial stage and other prognostic factors). Usually local recurrences have ominous prognosis. The standard treatment is hormonotherapy.

Material and methods: In MSC Memorial Cancer Center and Institute of Oncology, Gliwice Branch, a researched program on salvage HDR brachytherapy for local recurrences of prostate cancer treated earlier with radiotherapy has been opened since February 2008. Eligibility criteria: confirmed local recurrence after treatment for localized prostate cancer at east 2 years ago (transrectal ultrasound or MRI of the prostate, bone scan for occult metastases, biopsy of the prostate for histopathological confirmation of the recurrences). The earlier treatment were mainly external beam radiation but patients treated with external beam radiation with boost from brachytherapy are not excluded. Exclusion criteria was the same as for any HDR brachytherapy of prostate (volume > 60 cm3, TURP within 6 months, infiltration of the external sphincter of the bladder neck, significant urinary obstructive symptoms, pubic arch interference, litotomy position or anesthesia not possible). HDR brachytherapy was delivered using an Iridium-192 stepping source (MicroSelectron™, Nucletron NV). Treatment planning was performed intra-operatively. Needle applications were performed during spinal anesthesia. The treatment consisted of 3 fraction 10 Gy each given every 14 days. The dose was specificated on the prostate capsule or 2-3 mm from it (depending on clinical case). Generally homogenous needle distributions were applied with planed hot-spot in case of visible tumor. Maximal urethral doses (calculated at the centre of each urethral outline each 5 mm) were constrained to be 120% of prescribed dose. Maximal bladder and rectum doses were constrained to be 70% of prescribed dose.

Results: Fifteen patients eligible were treated and analyzed from February 2008. All patients completed the treatment without major complication. The most common early complication were: macroscopic hematuria, pain in lower part of the abdomen, transient dysuria. During the first week after the procedure transient increase in IPPS score were noticed. A Foley catheter was removed on day 2nd to 5th. No complication after spinal anesthesia were observed. Acute toxicity according to EORTC/RTOG was low. For bladder EORTC/RTOG score was ranking from 0 to 2. Only in two patients grade 1 toxicity for rectum was observed. The follow up range from 4 to 14 months. In all patients early toxicity ceased quickly after treatment (lasting up to 3 weeks). No late toxicity were observed so far. In all patients but one decrease in PSA level were observed (one patients developed metastases in bones).

Conclusions: Salvage brachytherapy for localized prostate cancer (10 Gy every 14 days) seems to be safe and well tolerated procedure. The efficiency of the procedure is yet to be established.

HDR Brachytherapy of prostate cancer – 2 years of treatment in Greater Poland Cancer Center

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Purpose: External beam radiotherapy (EBRT) in prostate cancer treatment seems to be nowadays as effective as surgery procedure. Low dose rate brachytherapy (LDR-BT) can be applied as a single modality treatment in patients from low risk group with localized tumors. High dose rate brachytherapy (HDR-BT) is very useful in increasing prostate dose after EBRT (boost) which shortens whole radiation treatment. There is no clear recommendations about doses and schemes of combined radiation treatment (EBRT-BT). The aim of this work was to analyze the results and complications of three schemes in treatment of patients with initially localized prostate cancer and at least 2 years observation time.

Material and methods: Sixty-three patients were enrolled to the study and divided to groups according to radiation schemes (I – EBRT 50/BRT 15, II – EBRT 46 Gy/BRT 2 × 10 Gy, III – BRT 3 × 15 Gy) Group I, II,
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III consisted of 46 (73.02%), 14 (22.22%), 3 (4.76%) patients respectively. HDR-BT was performed with a remote afterloading microSelectron unit (192Ir source) after planning procedure (SWIFT and Oncentra System). Mean age of men undergoing observation was 80.3 years (ranged from 59 to 80). The low, intermediate and high risk groups consisted of 22 (35%), 18 (28%) and 22 (35%) men, respectively. The mean level of initial PSA (iPSA) was settled on 23.13 ng/ml ranged from 0.12 till 132 ng/ml. Maximum androgen blockade had 29 of them (46.03%) and 20 patients (31.75%) received LHRH analogs or antiandrogen treatment only. In 7 of men (11.11%) has been treated by brachytherapy after transrectal resection procedure (TURP). Number of needles used during HDR-BT treatment in all patients was 14.036 in mean value 

Results: Median observation time was 24 months. None of patients enrolled to our study died during this time. Complete remission was observed in 44 patients (69,84%) from whole group. Mean nadir value observed during follow up time was 0.094 ng/ml (range 0.00-0.69). Locoregional progression was noted in 2 patients (3.17%). 4 patients (6.35%) from our group developed distant metastases. Urologic and gastrointestinal side effects were noted in most of patients from both groups. Dysuria - 40%, incontinence - 7.94%, frequency - 50%, acute urinary retention - 4.76%, rectal bleeding - 15.87%, diarrhea - 7.94%.

Conclusions:
1. HDR brachytherapy of prostate cancer can be used as a boost after or before external beam radiation therapy or as a sole modality treatment in different schemes.
2. HDR brachytherapy is a safe method of large dose delivering to prostate gland with sparing health tissue and good local control rate
3. To confirm superiority of each kind of modality treatment a comparative investigation in larger groups is needed.