Tadalafil 5 mg Once Daily Improves Lower Urinary Tract Symptoms and Erectile Dysfunction: A Randomized, Double-blind, Placebo-controlled, 12-month Study

Hypothesis / aims of study
Low-dose rate brachytherapy (LDR) has become a popular treatment option for localized prostate cancer. However, lower urinary tract symptoms (LUTS) often occur following the implantation. Erectile dysfunction (ED) is thought to be lower incidence rather than prostatectomy but still problems after implantation. Nowadays, prophylactic use of alpha-1 adrenergic receptor antagonist (α1ARA) is the most common treatment or prevention for LUTS after LDR. For ED, taking phosphodiesterase-5 inhibitors on demand is one of the choice. On the other hand, usefulness of tadalafil was established as a treatment for male LUTS with benign prostatic hyperplasia and ED. (Ref #1 and #2) Although tadalafil may be theoretically useful for management of LUTS and ED after LDR, the role of tadalafil after LDR has not been established yet. We herein investigated the efficacy of tadalafil to attenuate adverse events after LDR comparing tamsulosin, alpha-1-adrenergic receptor antagonist.

Study design, materials and methods
This study was conducted as a multicenter randomized open-label trial. The ethical committee approved this study in both Shinshu University and Nagano Municipal Hospital. Informed Consent was obtained from each participants. Localized prostate cancer patients (80 years less, T2 or less, PSA 10ng/ml or less, Gleason score 3 or less) without LUTS were enrolled in this trial. International prostate symptom score (IPSS) and overactive bladder symptom score (OABSS) were used for subjective evaluation for LUTS. And, uroflowmetry (Qmax and voided volume) and residual urine volume were measured for objective evaluation for LUTS also. Sexual health inventory for men (SHIM) were used for evaluation of ED. Each clinical parameter was evaluated a total of 36 weeks after baseline, and the effect of tadalafil on ED after LDR was statistically superior to tamsulosin group (p<0.05).

Results
The results of LUTS were shown in Figure(A-E). Means of total IPSS in tamsulosin group at baseline, 3, 6, 9, 12 months after LDR are 10.2, 17.6, 17.3, 14.7, 11.6, and 10.9 respectively. And, those in tadalafil group are 9.9, 18.4, 17.2, 14.8,12.6, and 10.7 respectively. There was no significant difference in the patient background among the groups.

Interpretation of results
Edema after seed implantation and circulatory impairment due to radiation provoke LUTS. LUTS got worse in 3 months and gradually naturally improve. Circulatory impairment and neurogenic disorder after radiation sometimes cause sexual dysfunction too. Previous study already showed the efficacy of tamsulosin or silodosin for LUTS after LDR. There is a study which reports anticholinergic agent could relieve OAB symptoms. Also, tadalafil affects both urinary and erectile dysfunction. The results after LDR comparing LDR after LDR better than LDR on BPH. It also inhibits afferent nerve activity enhanced by bladder hypertrophia, bladder blood flow disorder, inflammation, and oxidative stress. Although tadalafil has different mechanisms on LUTS from tamsulosin, tadalafil was effective on LDR after LDR as well as tamsulosin was in this trial. Tadalafil equally attenuated the effect of LDR on LUTS. And, the effect of tadalafil on ED after LDR is statistically superior to tamsulosin in this trial. Tadalafil might improve blood flow in urinary bladder and prostate, and attenuated symptoms.

Concluding message
Tadalafil can be a prophylactic option for management of LUTS and ED after LDR. Especially, tadalafil is a treatment option about ED after LDR better than tamsulosin.

References

COI: None to declare
This research was approved at ethical committee of Shinshu University and Nagano Municipal Hospital.

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