

## Letter to the Editor

# Brachytherapy and external beam radiation therapy for prostate cancer

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Dear Editor of American Journal of Cancer Science,

I have had an opportunity to read the article entitled "*Feasibility of Multisolutions Optimization Technique for Real-Time HDR Brachytherapy of Prostate*" [1] published in Volume 2, Issue 2 of **American Journal of Cancer Science**. The article covers the brachytherapy procedure for the prostate cancer treatment as well as illustrates the optimization technique to achieve conformal dose distributions with reduced dose to the normal tissues. The interesting part of this article is the use of multisolutions optimization for high-dose rate (HDR) brachytherapy for the prostate cancer. Current statistics show that prostate cancer is the most commonly diagnosed cancers among men across the globe. In addition to HDR brachytherapy, it is worth mentioning the use of low-dose rate (LDR) brachytherapy. In LDR brachytherapy, the use of radioactive seeds such as I-125 and Pd-103 is quite common to treat the prostate cancer. [2]

The HDR brachytherapy can be performed either as a monotherapy or as a boost treatment after an EBRT.[3, 4] Authors [1] have focused on the prostate cancer, and discussion on other tumor sites is not discussed in depth. The HDR brachytherapy is also used to treat lung, esophagus, breast, and bronchus cancer as well as gynecological cancers. [4] While HDR brachytherapy can spare the health tissues, treatment outcome is dependent on the accuracy of the treatment plan, which contains the patient-specific dose distributions.

Hybrid inverse planning and optimization (HIPO) algorithm [4, 5, 6] is also used in HDR-brachytherapy by utilizing pre-defined number of catheters. The HIPO algorithm optimizes both the dwell times of the dwell location in each catheter and the position of each catheter. The catheter position distribution from such process can be accepted or rejected based on the objective function. Although HDR brachytherapy has become popular mainly for its advantages such as shorter treatment time and small applicators, HDR treatment requires special training to operate the system. External beam radiation therapy (EBRT) can be an alternative option to HDR brachytherapy for prostate cancer. A large number of studies have already demonstrated the feasibility of using photon and proton therapy for the prostate cancer. [7, 8] The use of proton therapy for cancer treatment is gaining wide-spread attention across the world. The research results [7] showed significant improvement in reducing rectal and bladder doses, and this could improve the quality of the prostate cancer patients. The combination of HDR-brachytherapy with proton and photon therapy can be the subject of future research that can further improve the radiotherapy treatment of prostate cancer.

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**Competing Interests:** The authors have declared that no competing interests exist.

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