

Letter to editor

IMRT, VMAT and Proton Therapy for Prostate Cancer Treatment

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Dear Editor,

Recently, I read an article entitled "*Literature Review on IMRT and VMAT for Prostate Cancer*" published by American Journal of Cancer Review in its *Volume 2, Issue 1* [1]. Authors have done excellent work in reviewing two radiation treatment techniques for prostate cancer, and the article also highlights various factors which can have direct or indirect impact on the dosimetric results. Prostate cancer is the most frequently diagnosed cancer among men in the world. Different types of treatment options are currently available to manage the prostate cancer, and radiation therapy is one of them. Due to advancement in computing power and technology, it is now possible to generate very conformal dose plans for the prostate cancer. Although VMAT provides slight advantage over the IMRT, the superiority of the VMAT over the IMRT is still a debating topic due to lack of clinical evidence [1].

In the review article [1], authors have focused solely on the IMRT and VMAT, which use photon radiation beams to deliver the radiation dose. However, there are other radiotherapy techniques, which can produce comparable results to that of IMRT and VMAT. The primary purpose of this letter is to provide brief update on the most advanced radiotherapy technique in the form of proton therapy for the prostate cancer. Proton therapy can produce excellent dose distribution because protons have finite range and sharp distal fall-off at the end of proton beam path [2]. Several studies [3-10] have shown that proton therapy is capable of producing excellent dosimetric results in terms of rectal and bladder sparing. For example, Vargas *et al.* [3] demonstrated that proton therapy is better at sparing rectum and bladder when compared to photon therapy. Trofimov *et al.* [4] showed that the angled lateral proton fields can further reduce the rectal dose. Rana *et al.* [5] showed that the combination of lateral and oblique fields in proton therapy provides dosimetric advantage over the VMAT for prostate cancer involving a metallic hip prosthesis. Chera *et al.* [6] showed that proton therapy reduced the dose to the bladder, rectum, small bowel, and pelvis when compared to the IMRT. In another study by Rana *et al.* [7], it was shown that the proton therapy produced lower values for the rectum and bladder doses for the similar target volume coverage when compared to the VMAT. Hence, literature review indicates that the advanced proton therapy technique has the potential of lowering rectal and bladder toxicities in prostate cancer patients when compared to the photon therapy such as IMRT and VMAT.

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