



## Re: A Literature Review of Proton Beam Therapy for Prostate Cancer in Japan

Hoshina RM<sup>1</sup>, Matsuura T<sup>2,3,4</sup>, Umegaki K<sup>2,3,4</sup>, Shimizu S<sup>2,3,5</sup>

<sup>1</sup>University of Santo Tomas Faculty of Medicine and Surgery, España, Philippines

<sup>2</sup>Hokkaido University Hospital, Proton Beam Therapy Center, Sapporo, Japan

<sup>3</sup>Hokkaido University Global Institution for Collaborative Research and Education, Global Station for Quantum Medical Science and Engineering, Sapporo, Japan

<sup>4</sup>Hokkaido University Faculty of Engineering, Division of Quantum Science and Engineering, Sapporo, Japan

<sup>5</sup>Hokkaido University Graduate Faculty of Medicine, Department of Radiation Oncology, Sapporo, Japan

J Clin Med 2019;8. pii: E48. doi: 10.3390/jcm8010048.

### EDITORIAL COMMENT

Prostate cancer (PCa) is one of the most common urological malignancies in men. The PCa incidence increases with age in addition to other comorbidities. Therefore, individualized therapy is the most suitable treatment modality. There is a variety of management options for PCa such as surgery, radiotherapy, hormone therapy, ablative therapy, active surveillance, as well as multimodal therapies. One of the standard treatments for localized PCa is radiation therapy, but it has considerable acute and late adverse effects on the gastrointestinal and genitourinary tract. Over the years, new radiotherapy techniques, such as image-guided radiotherapy, 3-dimensional conformal radiation therapy and intensity-modulated radiotherapy have decreased the risk of organ toxicity. On the other hand, the use of proton beams in radiation therapy further more reduces this probability. The two proton beam delivery techniques- passively scattered and intensity-modulated proton therapy-have been described in which irradiation affects only a localized area with reduced risk of damage to the adjacent tissues. Disadvantages of proton beam therapy (PBT) are the size of the device, cost, PBT facilities, and insurance. There have been various studies regarding the efficacy and adverse effects of PBT in patients with localized PCa. However, very few developed countries have this overly expensive treatment modality. In this review, Japanese authors have reported their results about this topic. PBT can be a suitable treatment option for localized PCa as a monotherapy or multimodal therapy for prognosis and quality of life of patients. In the near future, with further researches, development of engineering methods and achieving cost effectiveness, the role of PBT in the treatment of PCa may be clarified.

Fehmi Narter, MD, PhD