Available online at www.sciencedirect.com

ScienceDirect

journal homepage: http://www.elsevier.com/locate/rpor

Comment on "Proton beam and prostate cancer: An evolving debate" by Anthony Zietman [Rep. Pract. Oncol. Radiother. 2013;18:338–42]

*Carl J. Rossi**

Scripps Proton Therapy Center, 9730 Summers Ridge Road, San Diego, CA 92121, USA

After reading Dr. Zietman's thought-provoking paper[1] as article in press, I believe the following comments will add some additional context to the "debate":

1. Consider that another reason the "majority of cases" being treated are prostate cases is not only because of the time and financial requirements, but because of the limitations of technology-until recently most proton centers found it difficult to treat large, complex field shapes. Imagine if IMRT had been limited to a <20 cm field size when first introduced? I strongly suspect we would have seen a similar case mix predominating.
2. PBT plans do contain some uncertainties-as do photon plans. Clinical experience has validated the 1.1 RBE, else the rate of Gr ≥ 3 complications in the high-dose arm of PROG 9509 would have been far higher.[2] Ongoing improvements in PBT planning (widespread introduction of Monte Carlo calculations) will substantially mitigate these uncertainties.
3. Neutron production by passive-scattered proton treatment is at worst no greater than that seen in IMRT[3]; this disparity between the modalities increases with increasing field size.
4. It is not impossible to "Turn back the clock" on IMRT, particularly since its use was not validated in a randomized fashion before its widespread clinical adaptation-it is simply a question of intellectual and political will. Considering the far greater economic impact that IMRT is having on current annual radiation oncology expenditures than PBT, it would be far more cost-effective to sharply curtail IMRT use than to concentrate solely on PBT. To be scientifically consistent, IMRT should be subjected to the same standards of evidence as some insist on being met by PBT, and should require the same level of validation i.e., a Phase III prospective randomized trial of IMRT vs. 3-DCRT, IMRT vs. brachytherapy, etc.
5. IMPT is to protons what IMRT was to X-rays, yet the current PBT–IMRT randomized trial does not utilize IMPT but older, passive-scatter PBT which treats more normal tissue than IMPT, thus any conclusions emanating from the ongoing trial may not accurately reflect the clinical benefits which can be obtained with IMPT.

Conflict of interest

None declared.

Financial disclosure

None declared.

REFERENCES

1. Zietman A. Proton beam and prostate cancer: an evolving debate. *Rep Pract Oncol Radiother* 2013;**18**:338–42.
2. Zietman AL, Bae K, Slater JD, et al. Randomized trial comparing conventional-dose with high-dose conformal radiation therapy in early-stage adenocarcinoma of the prostate: long-term results from proton radiation oncology group/American college of radiology 95-09. *J Clin Oncol* 2010;**28**(7):1106–11.
3. Wroe A, Rosenfeld A, Schulte R. Out-of-field dose equivalents delivered by proton therapy of prostate cancer. *Med Phys* 2007;**34**(9):3449–56.

DOI of original article:http://dx.doi.org/10.1016/j.rpor.2013.06.001.
* Tel.: +1 858 549 7522; fax: +1 858 578 1144.
E-mail address: Rossi.carl@scrippshealth.org

http://dx.doi.org/10.1016/j.rpor.2013.09.001