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Editorial

Current Status of Brachytherapy for Prostate Cancer

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Editorial

Prostate Cancer (PCa) is the second commonest diagnosed malignancy and more than 62% of PCa are diagnosed in men over 65 years. It is the fifth leading cause of cancer mortality in men and represents a substantial public health burden, in special due to a rapidly aging population worldwide [1]. PSA as measurement for monitoring disease progression was approved in 1986 by the US Food and Drug Administration and late in 1994 it was endorsed its use for PCa screening among men aged more than fifty years [2].

There is a trend in declining mortality due to the disease and major reasons for it may be advances in PCa treatment options, including radical prostatectomy, hormonal therapy, and different and new techniques of radiation therapy [3]. Oceania, America, and European countries, followed by Africa, have the highest PCa incidence and the PCa mortality rates paralleled the incidence rates, in exception for Africa, where it was the highest. When comparing outcomes of countries with higher levels of human development and per capita GDP, we can observe a greater PCa incidence but not a greater mortality rate, [4]. A possible explanation could be the access to new treatment modalities, early diagnosis and potential difference in health care systems for recording the causes of incidence and mortality.

Several studies provided evidence for the efficacy of dose-escalation on Biochemical Control (BC) of PCa. Mature results from randomized trials show a direct relation between increasing the radiation dose given to the prostate and/or seminal vesicles and BC, but randomized data comparing different methods of dose escalation are sparse [5-8]. Traditionally, brachytherapy for the treatment of PCa has been performed using low dose rate (LDR) and as a single modality for low and some intermediate risk disease, or as a boost to External Beam Radiation (EBRT) for intermediate and high risk localized tumors, with excellent results reported by both single and multi-institutional studies [9]. A recent randomized trial - ASCENDE-RT - compared two methods of dose escalation for intermediate- and high-risk prostate cancer. Patients had EBRT - pelvic (46 Gy) followed by a boost with EBRT (78 Gy) or LDR, plus 12 months of androgen deprivation therapy. As results the EBRT boost arm doubled the rate of biochemical failure, but no significant OS difference was observed between arms (paper in press - 10.1016/j.ijrobp.2016.11.026).

On the other hand, high dose rate brachytherapy (HDR) is most commonly used to boost EBRT when treating men with intermediate and high-risk PCa, with excellent long-term results [10]. HDR is an important and effective method in achieving dose escalation in the radical radiotherapy PCa, with excellent BC when combined to EBRT [11]. The combination of HDR with EBRT has the advantage of overall treatment time reduction and in increasing in the capability of work load of the linear accelerators, especially in developing countries, where waiting lists and lack of radiation oncology facilities are a reality. Furthermore, in locally advanced disease has also the possibility of including the seminal vesicles when they needed to be encompassed. HDR has also a potential biological advantage through the delivery of high doses per fraction [12]. One prospective randomized trial with up to 10 years follow up has proved that HDR plus EBRT is more efficient than EBRT alone in terms of biochemical control with less acute rectal toxicity and improved quality of life [13].

Conversely, the use of HDR as single treatment modality, and even with single dose, has already been reported as favorable by several single-institution, but with short-term clinical outcomes [14,15]. Mature results of this technique are still missing in the literature, and furthermore, results of developing countries are inexistent. In conclusion, PCa incidence is expected to increase in the future, further straining limited health care resources. Despite the fact that comparisons between series published are difficult due differences in the techniques and planning for both, EBRT, LDR and HDR, an appropriate allocation of resources for cancer prevention, early diagnosis, and curative treatments is required worldwide.

References

1. Global Burden of Disease Cancer Collaboration, Fitzmaurice C, Allen C, Barber RM, Barregard L, Bhutta ZA, et al. (2016) Global, Regional, and National Cancer Incidence, Mortality, Years of Life Lost, Years Lived with Disability, and Disability-Adjusted Life-years for 32 Cancer Groups, 1990 to 2015: A Systematic Analysis for the Global Burden of Disease Study. JAMA Oncol 3: 524-548.
2. Hankey BF, Feuer EJ, Clegg LX, Hayes RB, Legler JM, et al. (1999) Cancer surveillance series: interpreting trends in prostate cancer--part I: Evidence of the effects of screening in recent prostate cancer incidence, mortality, and survival rates. J Natl Cancer Inst 91: 1017-1024.
3. Fontes F, Severo M, Castro C, Lourenço S, Gomes S, et al. (2013) Model-based patterns in prostate cancer mortality worldwide. Br J Cancer 108: 2354-2366.
4. Wong MC, Goggins WB, Wang HH, Fung FD, Leung C, et al. (2016) Global Incidence and Mortality for Prostate Cancer: Analysis of Temporal Patterns and Trends in 36 Countries. Eur Urol 70: 862-874.
5. Al-Mamgani A, van Putten WL, Heemsbergen WD, van Leenders GJ, Slot A, et al. (2008) Update of Dutch multicenter dose-escalation trial of radiotherapy for localized prostate cancer. Int J Radiat Oncol Biol Phys 72: 980-988.
6. Dearnaley DP, Sydes MR, Graham JD, Aird EG, Bottomley D, et al. (2007) Escalated-dose versus standard-dose conformal radiotherapy in prostate cancer: first results from the MRC RT01 randomised controlled trial. Lancet Oncol 8: 475-487.
7. Kuban DA, Tucker SL, Dong L, Starkschall G, Huang EH, et al. (2008) Long-term results of the M. D. Anderson randomized dose-escalation trial for prostate cancer. Int J Radiat Oncol Biol Phys 70: 67-74.
8. Zietman AL, DeSilvio ML, Slater JD, Rossi CJ Jr, Miller DW, et al. (2005) Comparison of conventional-dose vs high-dose conformal radiation therapy in clinically localized adenocarcinoma of the prostate: a randomized controlled trial. JAMA 294: 1233-1239.
9. Grimm P, Billiet I, Bostwick D, Dicker AP, Frank S, et al. (2012) Comparative analysis of prostate-specific antigen free survival outcomes for patients with low, intermediate and high-risk prostate cancer treatment by radical therapy. Results from the Prostate Cancer Results Study Group. BJU Int 109: 22-29.
10. GC Morton (2014) High-dose-rate brachytherapy boost for prostate cancer: rationale and technique J Contemp Brachytherapy 6: 323-330.
11. Pellizzon AC, Salvajoli JV, Maia MA (2004) Late urinary morbidity with high dose prostate brachytherapy as a boost to conventional external beam radiation therapy for local and locally advanced prostate cancer. J Urol 171: 1105-1108.
12. Pellizzon AC, Nadalin W, Salvajoli JV, Fogaroli RC (2003) Results of high dose rate after loading brachytherapy boost to conventional external beam radiation therapy for initial and locally advanced prostate cancer. Radiother Oncol 66: 167-172.
13. Hoskin PJ, Rojas AM, Bownes PJ, Lowe GJ, Ostler PJ, et al. (2012) Randomized trial of external beam radiotherapy alone or combined with high-dose-rate brachytherapy boost for localized prostate cancer. Radiother Oncol 103: 217-222.
14. Prada PJ, Jimenez I, Gonzalez-Suarez H, Fernandez J, Cuervo-Arango C, et al. (2012) High-dose-rate interstitial brachytherapy as monotherapy in one fraction and transperineal hyaluronic acid injection into the perirectal fat for the treatment of favorable stage prostate cancer: treatment description and preliminary results Brachytherapy 11: 105-110.
15. Hoskin P, Rojas A, Ostler P, Hughes R, Alonzi R, et al. (2014) High-dose-rate brachytherapy alone given as two or one fraction to patients for locally advanced prostate cancer: acute toxicity. Radiother Oncol 110: 268-271.