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Unexpected lower biochemical control of high-dose-rate brachytherapy boost than low-dose-rate brachytherapy boost for clinically localized prostate cancer

To the Editor,

With great interest, we read the article by Slevin F et al. published recently in the Clin Transl Radiat Oncol journal [1]. They compared the outcome between LDR boost and HDR boost for men with intermediate and high risk prostate cancer. It is surprising that they concluded that LDR–EBRT may provide more effective PSA control at 5 years compared with HDR–EBRT. Generally, HDR boost could appeal equivocal efficacy to LDR or superior in some extent (dose distribution outside prostate), so that we have several questions to explain the difference. At first, HDR schedule could be a reason of poor outcome. Seventeen Gy in 2 fractions (BED = 84.9 Gy, α/β = 2) + 35.75 Gy in 13 fractions EBRT (BED = 95.6, total BED 174.2 Gy) have a lower BED than commonly used fractionation (HDR boost: 9.5 to 11.5 Gy × 2 fractions – 5.5 to 7.5 Gy × 3 fractions – 4.0 to 6.0 Gy × 4 fractions etc.). Apparently, they elevated intensity to 15 Gy/1fr (BED = 127 Gy) + 37.5 Gy/15fr EBRT (84.4 Gy, total BED = 211.9 Gy) in 2010. There may be improvement of bPFS by later schedule. Could you supply the data separately according to schedule and risk category (high and intermediate)? Joseph [2] and Yaxley [3] also reported insufficient outcome for high risk group with low BED HDR schedule. Next, as T3b category is a further important risk factor among T3 category. HDR has a potential for significantly improved dose coverage for T3 disease, while LDR dose is commonly prescribed up to 3 mm outside the capsule, coverage of gross extra capsule invasion and especially extensive seminal vesicle invasion is limited due to potential migration of seed placed outside prostate or in seminal vesicle (T3b). Please let us know the number of T3a and T3b separately. Additionally, 97 patients included in HDR group (Table 1 of Ref 1) but 94 patients are categorized as a high risk group (3 patients categorized to where?). At last, follow-up periods (57 months for HDR) is not enough to draw 5y-outcome.

We have made a transitional study from LDR to HDR in 1980–90s including a phase III trial between LDR and HDR in tongue cancer treatment [4]. Then, we installed those HDR technique for prostate cancer brachytherapy and LDR brachytherapy thereafter, which is reversed order of Western countries [5,6]. Along with those experiences, we have an impression that HDR has a narrower treatment window than LDR (a little higher dose elevates toxicity and a little lower dose made poorer efficacy). In trend of hypo fractionation, one to two fractionations, these data [1–3] are very important to draw optimal fractionation for localized prostate cancer.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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