AbstractID: 8236 Title: Evaluation of planned dose using measured source strength for permanent prostate implant

ABSTRACT

Purpose

For permanent prostate implant single seed assays were performed in ten patients and source strength of each seed was recorded. The dose effects in preplan were analyzed when the measured source strength was randomly applied to the planned source positions.

Materials and methods

A well-type ionization chamber with a single seed holder was used to measure source strength of ^{125}I seeds before implant for 10 patients. Preplans were made using both the source strength of the manufacture stated value (0.355 mCi) and the measured value. Prescribed dose was set to 145 Gy and V100 of the target was kept over 95 % of each plan. In the case of using the measured source strength, source strength was randomly applied to the source position to ignore the uncertainty that it was not possible to predict where the source implanted was. The dose volume parameters were V100 and V150 of the target, D90, V150 of the urethra, respectively.

Results

Every parameter for all cases was within 1 % of standard deviation using the measured source strength, while the ratio of every parameter between the measured and the manufactured stated value was tended to the same as the difference of source strength. In particular V150 of the target and D90 were depended on the difference of the source strength between measured and manufacture stated value. The discrepancy was ranged between -3 to 3 percent. V100 of the target and V150 of the urethra were not significantly depended on the difference of source strength.

Conclusion

Based on the AAPM TG56 the measured value and manufacture stated value were within acceptable limits, either the manufacture’s or institution’s value may be used. We found that the dose effect was acceptable for dose calculation using if the measured source strength was acceptable limit.