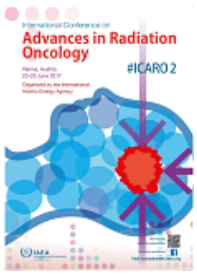

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Dosimetric optimization of BATD-3D interstitial prostate treatments with 60Co and Multi-image technique

Wednesday, 21 June 2017 10:55 (5 minutes)

INTRODUCTION:

It is presented an efficient and quick method to dosimetric optimization using multi-imaging technique for interstitial prostate cancer HDR brachytherapy (BATD-3D) with 60Co Source- BEBIG.

MATERIALS AND METHODS:

Establish an optimization process for interstitial needle placement, target volume contour, Organs at risk contour, and treatment planning with the use of different image thechniques (MRI, CT and US) that optimize application time, planning time, and treatment total time. Also it is done dosimetric planification evaluation using different index such as COIN, Paddick Index (PI), conformity/gradient Index (CGI).

RESULTS:

In table 1 it is seen that dosimetrical values obtained for each organ at risk, achieving constraints for each case. In Table 2 it is also shown quality index to CTV coverage, observing a COINprom=0.738 and stablish the use of the Paddick PIprom=0.757 and accordance/gradient Index ICGprom=78.7%. This way we could see to parameters to quality control for a correct treatment placement.

CONCLUSIONS:

The correct use of Multi –Imaging optimize the different procedures in the application of interstitial HDR Prostate Brachytherapy (Fig. 1), as well using quality index such as (COIN, PI and ICG) in order to assure a correct treatment dosimetry.

Organs at risk dosimetry needs to be in a narrow relation with CTV quality index, achieving the constraints for prostate volumetric treatments in our centre:

- Rectum: D0.1cc≤80%, D1cc≤70% y D0.1cc≤60%
- Bladder: D0.1cc<90%, D1cc≤60% y D0.1cc≤50%
- Urethra: D0.1cc≤120%, D1cc≤70% y D0.1cc≤10%

Country

PERÚ

Institution

ONCOSALUD- AUNA

Primary author: PAREDES VARGAS, Anthony (ONCOSALUD - RED AUNA)

Co-authors: GARCIA, Bertha (RED AUNA - CLINICA DELGADO); MARTINEZ PEREZ, David Antonio (ONCOSALUD); SARRIA BARDALES, Gustavo (ONCOSALUD - RED AUNA); PINILLOS ASHTON, Luis (ONCOSALUD - RED AUNA)

Presenter: SARRIA BARDALES, Gustavo (ONCOSALUD - RED AUNA)

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