Two years' experience with Stereotactic body radiotherapy for localized prostate cancer using the Cyberknife system

Azza M. Nasr, Mohamed S. Zagloul , Engy S. Todary , Rana Hegazy, Shaima Shoeir , Abdulrahman Ibraheem , Hany Ammar

Aim of the work:

To evaluate :

-Acute toxicity (The Common Terminology Criteria for Adverse Events (CTCAE) 5.0

-Clinical outcomes (2 years biochemical failure)
for newly implemented SBRT technique for localized prostate cancer using Cyberknife in 57357 hospital.

Materials and Methods:

Descriptive retrospective study.

-Data was collected form 51 prostate cancer patients who have been treated with Cyberknife at Children's Cancer Hospital Egypt between August 2022 and August 2024.

- A prostate-specifc membrane antigen positron emission tomography (PSMA-PET) scan was done for all patients.

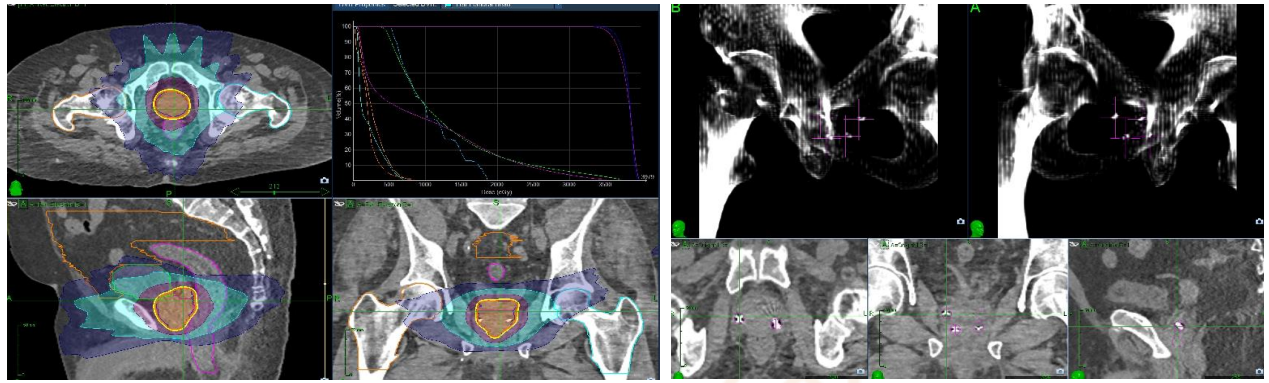
- Four golden fiducials marks were implanted in each patient using transrectal ultrasound 12 days prior to CT simulation for motion tracking during treatment

- Patients were simulated and treated with empty bladder and rectum.

- CTV consisted of the prostate only in low risk, Prostate plus 1cm or 2 cm of seminal vesicles in intermediate risk or high risk prostate cancer, respectively. A PTV margin of 5 mm in all directions was added , except for post border where it was 3 mm only.

Treatment:

- Treatment plans were designed using MLC collimator and the dose constraints to critical organs met the RTOG criteria
- A dose of 36.25 Gy in 5 fractions was delivered to 95% of the planning target volume (PTV), with a maximum dose of 40 Gy to 2% of the PTV.
- Dose prescribed to range 88% - 92% of Max. Dose in PTV.
- Patient specific quality assurance was performed for each patient using acceptance gamma criteria ≥ 95% of dose distribution.
- Average treatment delivery time was 17 minutes ± 2 minutes.
- Concomitant hormonal treatment was given according to the risk classification.



Results:

- 23 patients were of high risk
- 22 intermediate risk
- 6 were of low risk
- 11 /51 developed grade 1 lower GIT toxicity.
- While 9/51 developed grade 1 GU toxicity.
- The rest developed no toxicity, till the last day of follow up(11/2024)
- All were free of disease with normal PSA till last day of follow up.