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Theme: Clinical
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Title: Results of Image-Guided Heavy Ion Radiation Therapy Using Gold Markers for Prostate Cancer in High-Risk Group

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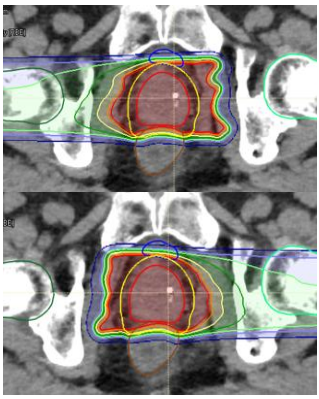
Background / Aims:

- To evaluate the 5-year outcomes of image-guided carbon-ion radiation therapy (CIRT) for high-risk prostate cancer using the LASTER scanning method under intraprostatic gold marker implantation.
- One of the longest follow up result of IG-CIRT with gold maker in this field.

Subjects and Methods:

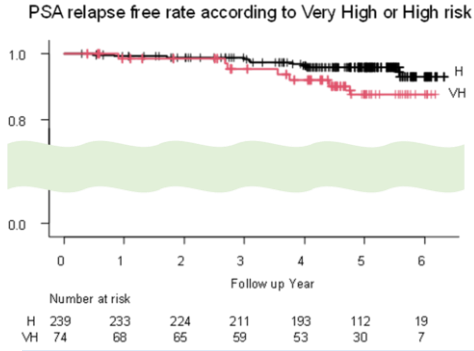
- Among 699 prostate cancer patients treated from Oct 2018 to Sep. 2020, 313 NCCN high-risk patients were analyzed in this study.

CIRT 51.6 Gy (RBE weighted dose) / 12fr	
# of patients	313
Age (median)	47-90 (72)
Gleason score 6 / 7 / 8 / 9 / 10 primary 5	9 / 74 / 168 / 53 / 9 21
iPSA (ng / ml) <10 / 10-20 / 20- / 40- Range (median)	 141 / 77 / 63 / 32 1.94 - 375 (10.98)
T classification; 1c-2a / 2b-c / 3a / 3b / 4	125 / 75 / 91 / 22 / 0
Risk classification (NCCN); High / Very High	239 / 74
NAH / AHT duration (Median Mo)	7 / 18
Follow up period (Median Mo)	59.5



- In principle, intraprostatic gold markers were implanted, laxatives were administered through treatment period, and the bladder volume was kept constant by measurement with BladderScan® before each treatment.
- PSA recurrence was defined by the Phenix definition.
- Adverse events were evaluated using CTCAE ver. 5.0.

Result:



- 5 years PSA relapse free rate; **94%**
96% in high risk, **88% in very high risk**
- 1 prostate cancer related death and 8 deaths from other reasons

- Cumulative G1 **hematuria** 7%, **no G2-4**
- Rectal bleeding at 2 years
G2; 0.7% (1 transfusion, 1 APC.)
G1; 7.3%, no G3-4

Conclusion:

- Image-guided heavy ion radiation therapy using gold markers for high-risk prostate cancer produced excellent PSA control and much fewer side effects.
- Considered as one of the most effective and least invasive treatment.