Should cervical cancer BT insertion be performed without US guidance?

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Purpose. US-guidance during BT insertion for cervical cancer (CC) was introduced at our institution. Aim of this work is: (1) to measure if US guidance in our experience has reduced the occurrence of uterine perforations (UP). (2) To define the dosimetric impact on OARs and HRCTV of uterine perforation and the effect of 3D optimization.

Materials and methods. 145 consecutive CT-based tandem/ovoids BT applications were reviewed, 50 and 95 respectively implanted with or without US-guidance. All patients had FIGO I-IIIB CC and received radio-chemotherapy and BT (4 fractions of 7 Gy) with 3D plan optimized to HRCTV drawn according clinical findings at time of BT. Constraints for rectumD2cc, bladderD2cc and sigmoidD2cc were 4.6 Gy, 6.4 Gy and 4.6 Gy respectively. OARs were contoured according GEC-ESTRO guidelines. Among the 145 reviewed, 23 applications with UP were identified (Group A) and a compared to 18 applications without uterine perforation (Group B). Cases were matched based on FIGO stage, clinical tumor dimensions at BT (width, thickness) and delivered plan track. All cases compared were FIGO I-IIB. Median HRCTV volume was 18.6 and 20.8 cm3 for Group A and B respectively. For all cases a standard point A plan was generated.

Results. Uterine perforation rates with or without US guidance were dramatically different: 23 out of 95 application and 0 out of 50 applications. In Group A HRCTVD90 was lower than in Group B: 7.5 vs. 9.1 Gy with standard, and 6.5 vs.7.55 with 3D-optimized plan. When standard plan was applied 100% of cases with perforation had at least 1 violation for OARD2cc vs. 68% in Group B. 3D-optimization reduced these values to 13% and 0% respectively.

Conclusion. UP results in a reduced HRCTV coverage and higher OAR dose. 3D optimization reduces overdose to OAR but not allows compensating HRCTV under-dosage. US is the most effective method to reduce the incidence of uterine perforations in GYN BT.

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Sixteen-day schedule for intermediate and high risk prostate cancer

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Introduction. Prostate cancer is particularly sensitive to radiation delivered at a high dose per fraction. We hypothesized that this novel schedule would have an increased biological effect on tissues with a lower a/b, with less acute toxicity and with savings in resource utilization.

Purpose. To determine the short-term effects tolerance and side effects of a single HDR brachytherapy fraction of 15 Gy and hypofractionated External Beam Radiation Therapy (EBRT) for prostate cancer.

Methods and materials. Patients received high-dose-rate brachytherapy as a single 15-Gy dose, followed by EBRT at 37.5 Gy in 15 fractions over 3 weeks, and were followed prospectively for toxicity (using CTCAE v.3.0) and urinary symptoms (using the International Prostate Symptom Score [IPSS]). Clinical examinations and PSA measurements were performed at every visit. The trial has accrued 52 patients, with a median follow-up of 6 months.

Results. The median age was 70 years (range 56–79), median initial PSA 10 ng/ml (3–34). Sixty-three percent of the patients were High Risk, 35% Intermediate Risk and 2% percent Low risk. Only 20% of patients did not receive Androgen Deprivation Therapy (ADT), 48% received 6 months and 33% received 24 months. The median prostate volume was 28 cm3 (15–72), the median number of needles 16 (12–18). Median CTV and OAR doses were: V100: 98% (90–100), V150 28 (21–38), V200 8 (6–16). Urethral Pmax 115%, Rectum 2 cm3 65%. Acute grade 2 Genitourinary and Gastrointestinal toxicity occurred in 21% and 23% of patients, respectively. No grade 3 acute toxicity has occurred. Median baseline IPSS was 7 (range 3–24), all patients with at least 3 months of follow-up returned to baseline level. With a maximum follow-up of 26 months no patient has experienced biochemical failure.

Conclusion. This novel schedule is well tolerated in the short term, with low toxicity and encouraging early indicators of disease control.

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