Clinical impact of IGABT in cervical cancer

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Abstract not received.

Patient reported quality of life with IGABT in cervical cancer

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Image guided adaptive brachytherapy (IGABT) as part of combined radiochemotherapy for locally advanced cervical cancer is associated with improved rates of local control with simultaneous decrease in morbidity compared to use of standard brachytherapy plans in several institutional series. Besides tumor control and morbidity, health related quality of life (HR-QoL) including patient reported symptoms can provide additional important information to evaluate treatment efficacy. While clinician-assessed morbidity scales are objectively defined, patient reported symptoms provide a subjective evaluation without clinical interpretation. Several studies have pointed out that there can be considerable underreporting of morbidity when patient reported symptoms are taken into account, especially for low grade morbidity. Comparison of HR-QoL results with age matched normal population data can help to point out which symptoms or issues are most prevalent during follow-up.

Purpose/Objective: To identify prognostic factors for local control in patients treated for locally advanced cervical cancer with image guided adaptive brachytherapy, and analyse their potential impact on planning aims. Materials and Methods: Patients treated with curative intent by a combination of external beam radiotherapy and pulsed-dose rate brachytherapy were selected. Local failure was defined as any relapse in the cervix, vagina, parametria, or uterus during follow-up. Prognostic factors were selected based on log rank tests and then analyzed with a Cox model. Dose/effect correlations were performed using the Probit model.

Results: Two hundred and twenty-five patients treated from 2006 to 2011 were included. According to the FIGO classification, 29% were stage IB, 58% stage II, 10% stage III, and 3% stage IV; 95% received concomitant chemotherapy. Thirty patients were considered having incomplete response or local failure. Among the selected parameters, D90 for HR-CTV, D90 for IR-CTV, the overall treatment time, the TRAK, and the HR-CTV volume appeared significantly correlated with local control in univariate analysis. In multivariate analysis, overall treatment time > 55 days and HR-CTV volume > 30 cm³ appeared independent. The Probit analysis showed significant correlations between the D90 for both CTVs, and the probability of achieving local control (p=0.008 and 0.024). The thresholds to reach to warrant a probability of 90% of local control were 85 Gy to
the D90 of the HR-CTV and 75 Gy to 90% of the IR-CTV (in 2 Gy equivalent, a/β=10). To warrant the same local control rate, the D90 HR-CTV should be significantly increased in stage III-IV tumors, in case of HR-CTV > 30 cm³, excessive treatment time, or tumor width at diagnosis > 5 cm (97, 92, 105, and 92 Gy respectively). Combining the two independent local prognosis factors: OTT < 56 days and HR-CTV < 30 cm³; OTT > 55 days and HR-CTV volume < 30 cm³, OTT < 56 days and HR-CTV volume > 30 cm³, and OTT > 55 days and HR-CTV volume > 30 cm³, expected local control rates were 94.3%, 86.6%, 81.7%, and 64.5% respectively, for a planned D90 of 85 Gy (p=0.001).

Conclusions: Overall treatment time and HR-CTV volume were independent prognostic factors for local control. The planned D90 HR-CTV should be adapted to oncological criteria.

OC-0130
Dose effect relationships for rectal bleeding after MRI-guided adaptive brachytherapy for cervical cancer
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Purpose/Objective: To establish dose volume-effect relationships for late rectal bleeding in cervix cancer patients treated with chemoradiation and MRI-guided adaptive brachytherapy within a prospective longitudinal multicenter study (EMBRACE study Aim 6).

Materials and Methods: The first 700 patients included in the EMBRACE study were selected. Patients were included prior to treatment initiation, and treated with curative intent according to institutional protocols. Reporting followed the GEC-ESTRO recommendations (D0.1cm³, D2 cm³ OAR). During follow-up assessments of morbidity (CTC-AE 3.0) including rectal bleeding was conducted 3, 6, 9, 12, 18, 24, 30, 36, 48, and 60 months after treatment completion. Late morbidity was defined as any event occurring or lasting over 90 days after treatment initiation. Patients with missing D2cm³, or follow-up less than 90 days from treatment initiation were excluded. All doses were converted in 2 Gy equivalent using the linear quadratic model and a/β=3 Gy. In case of multiple events in a single patient, the one with the highest grade was retained for analysis. Dose effect-relationships were assessed using log rank tests and the probit model.

Results: A number of 634 patients fulfilled the inclusion criteria. Mean age was 50.6 years (22.2-91.6), and 94.6% of the patients received concomitant chemotherapy. The median follow-up was 31.5 months (3-66). The mean DICRU, D0.1cm³, and D2cm³ were 66.3+/-8.3 Gy, 73.4+/-11.8 Gy, and 63.2+/-7.2 Gy, respectively. A total of 223 events was reported, 0.35 per patient (0-6). 117 patients had rectal bleeding: 87 grade 1 (13.7%), 22 grade 2 (3.5%), and 8 grade 3 (1.3%). No grade 4 was reported. The mean time to onset was 18.0+/-9.5 months. Monitoring of the prevalence of grade 1-4 events showed an increasing rate of rectal bleeding from 3 months to 2 years (2.5 and 11.6% respectively) followed by a trend to recovery (8.1% and 5.6% at 30 and 36 months). Actuarial cumulative incidences of grade 1-4, 2-4, and 3-4 were 24%, 6.8%, and 2% respectively at 3 years. Sorting patients according to dose levels (D2cm³ >75 Gy, 70-75, 65-70, 60-65, 55-60, and 1), for grade 1-4, and 2-4 events (p and D0.1cm³ and the probability of grade 1-4, 2-4, and 3-4 events, as well as between DICRU and grade 1-4, 2-4, but not for grade 3-4 events. According to this model, a dose constraint of 75 Gy for the D2cm³ corresponded to 31%, 9.7%, and 3%, of grade 1-4, 2-4, and 3-4 rectal bleeding respectively. Decreasing this constraint to 70 Gy would lead to probabilities of 25%, 7%, and 2% respectively.

Conclusions: Significant dose volume-effect correlations were found for late rectal bleeding and D0.1cm³ - D2cm³.

OC-0131
Clinical outcome of MRI-guided brachytherapy and radiochemotherapy for locally advanced cervical cancer patients
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Purpose/Objective: To report the dosimetric parameters and clinical outcome of locally advanced cervical cancer (LACC) patients treated with radiochemotherapy (RCT) and MRI-guided pulsed-dose-rate (PDR) adaptive brachytherapy (IGABT).

Materials and Methods: Between 2007 and 2013 one hundred thirty-three patients with FIGO stage IB1 N0 or ≥ IB2 cervical cancer were treated with RCT+IGABT. Treatment schedule included a pelvic±paraortic external beam radiotherapy