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Prognostic factors for disease-free interval in patients with rectal cancer treated with neoadjuvant chemoradiotherapy and dose intensification

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Purpose/Objective:
The standard treatment approach for locally advanced rectal cancer (LARC) involves neoadjuvant chemoradiotherapy (nCRT), followed by surgery, with/without adjuvant chemotherapy (CT). Identifying predictive and prognostic biomarkers is crucial to selecting patients who are most likely to benefit from this treatment. This study aimed to identify prognostic parameters for disease-free interval (DFI) in patients with LARC treated with nCRT intensified using volumetric modulated arc therapy-simultaneous integrated boost (VMAT-SIB).

Material/Methods:
A total of 82 LARC patients treated between June 2020 and April 2022 were included. Tumors were distally located in 80.5% of cases. Radiotherapy was delivered with 45 Gy (1.8 Gy/fraction) to the mesorectum and regional lymphatics and a SIB of 54 Gy (2.16 Gy/fraction) to the macroscopic disease with 2 cm margin. Concomitant CT (5-fluorouracil and leucovorin) was administered during the first and fifth weeks of RT. Clinical response was assessed 8 weeks post-nCRT using pelvic MRI and rigid proctoscopy. For patients with a clinical complete response (cCR) and distal tumors, a watch and wait approach was employed. Surgery was conducted 8–14 weeks post-nCRT. Responders (50%) were defined as achieving cCR as well as patients with surgery conducted with Mandard tumor regression grade (TRG) 1–2, while non-responders group (50%) included patients with TRG 3–5. DFI was measured from surgery or control MRI (8 weeks post-nCRT for watch-and-wait patients without relapse within the first two years) to regional/distant progression or last follow-up. Sphincter preservation was achieved in 65% of patients.

Results:
Surgery was performed on 65 patients (79.3%), while 17 patients (20.7%) were managed with the watch-and-wait approach. Of the watch-and-wait cohort, 8 patients experienced relapse, and 87.5% were salvaged with surgery. Only one patient experienced both local and distant relapse and wasn't operated on. Median DFI was 27 months (range: 1–45 months), with a 3-year DFI rate of 75.8%. Statistically significant prognostic factors included pre-treatment (mucinous differentiation, extramural vascular invasion [EMVI], circumferential resection margin [CRM]

involvement, tumor morphology, T stage, and elevated CA 19-9 levels) and post-treatment factors (resection margin status, pathological complete response [pCR] and cCR >2 years, rectal cancer regression grade category [RCRG], Dukes stage, lymphovascular/vascular/perineural invasion, ypT, ypN, ypUICC stage, nodal deposits, CRM involvement).

Conclusion:
DFI in LARC patients is influenced by both baseline and treatment-related factors. Identifying these parameters can guide personalized therapeutic strategies, including the incorporation of additional CT in neoadjuvant settings, as part of total neoadjuvant therapy (TNT).

Keywords: rectal cancer, nCRT, disease-free interval

References:
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Inter-fraction variability of the mesorectum during long-course radiotherapy in rectal cancer

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Purpose/Objective:
In patients with rectal cancer (RC) treated with external beam radiotherapy (EBRT), the clinical target volume (CTV) includes the tumor and mesorectum (MR); however, the position and shape may vary during treatment. To assess whether it is necessary to expand the CTV based on MR variability during long-course EBRT.

Material/Methods: