Impact of Neoadjuvant Chemotherapy With or Without Radiation on Local Recurrence in Patients With Locally Advanced Rectal Cancer

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BACKGROUND

- The standard treatment of clinical stage II or III locally advanced rectal cancer (LARC) involves preoperative chemoradiation, surgery, and adjuvant chemotherapy.
- However, pelvic radiation poses both long-term and short-term risks to bowel, bladder, sexual function, and quality of life.
- In this study, we investigate the feasibility of radiation-sparing therapy in the treatment of patients with LARC.

METHODS

- A single center retrospective cohort study was conducted at a tertiary care referral center which included 25 patients who had radiologically confirmed LARC requiring either abdominoperineal resection (APR) or low anterior resection (LAR) in a 10-year period.
- We assessed the rates of local recurrence (LR) in patients who received only neoadjuvant chemotherapy (**CT**) compared to patients who received both neoadjuvant chemotherapy and radiation therapy (**CT-RT**).

RESULTS

Table 1. Demographic and Clinical Characteristics of Patients

	CT (N=15)	CT-RT (N=10)	p-value
Mean BMI	29.43	27.18	0.891
Type of Surgery			
LAR	13 (86.7%)	6 (60%)	0.175
APR	2 (13.3%)	4 (40%)	
Mean OR Time (min)	144.25	190.20	0.104
Mean EBL (mL)	155.38	450	0.115
Mean Length of Stay (days)	5.27	7.70	0.115
Median No. of Lymph Nodes Harvested	28	19	0.103
Median No. of Lymph Nodes Involved	1	0	0.080
Mean Tumor Distance from Anal Verge (cm)	10.49	4.50	**0.027***
Anastomotic Leak	1 (6.7%)	1 (10%)	1.000
Postoperative Complications	3 (20%)	3 (30%)	0.653
30-Day Readmission	5 (33.3%)	6 (66.7%)	0.206
Pathology			
Adenocarcinoma	11 (78.6%)	9 (100%)	0.253
Others	3 (21.4%)	0 (0%)	
KRAS mutation	1 (33.3%)	0 (0%)	1.000
BRAF V600E mutation	0 (0%)	1 (50%)	1.000
MSI			
Stable	7 (77.8%)	2 (50%)	0.530
Low	2 (22.2%)	2 (50%)	
cT			
T3	14 (93.3%)	8 (88.9%)	1.000
T4	1 (6.7%)	1 (11.1%)	
cN			
N0	1 (6.7%)	3 (33.3%)	0.187
N1	9 (60%)	5 (55.6%)	
N2	5 (33.3%)	1 (11.1%)	
Clinical Stage			
2A	1 (6.7%)	3 (30%)	0.206
3B	9 (60%)	6 (60%)	
3C	5 (33.3%)	1 (10%)	
pT			
T0	1 (7.1%)	2 (20%)	0.330
T1	1 (7.1%)	0 (0%)	
T2	0 (0%)	2 (20%)	
T3	11 (78.6%)	5 (50%)	
T4	1 (7.1%)	1 (10%)	
pN			
N0	7 (50%)	6 (60%)	0.639
N1	3 (21.4%)	3 (30%)	
N2	4 (28.6%)	1 (10%)	

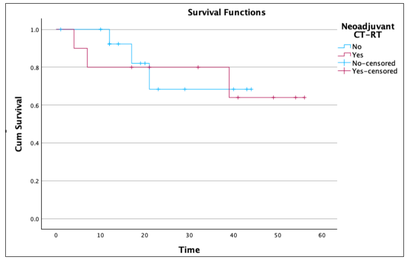


Figure 1. Kaplan-Meier curve of recurrence-free survival (RFS). Blue depicts patients who did not undergo neoadjuvant radiation and red depicts patients who received neoadjuvant radiation. Mean RFS of 21.13 months was noted in the CT group versus 32 months in the CT-RT group (p = 0.883)

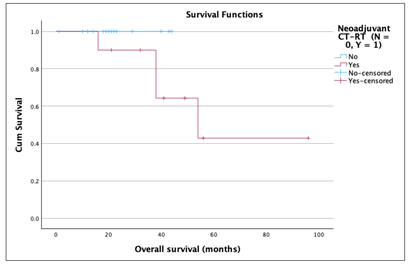


Figure 2. Kaplan-Meier curve of overall survival (OS). Blue depicts patients who did not undergo neoadjuvant radiation and red depicts patients who received neoadjuvant radiation. Mean OS was found to be higher in the CT-RT group at 44.1 months compared to 23.56 months in the CT group (p = 0.164)

- The mean age in the cohort was noted to be 58 years and comprised of 56% males and 44% females.
- Racial and ethnic distribution included Black/African American (8%), Caucasian (68%), Hispanic (8%), Asian (12%), and Others (4%).
- Local recurrence in both study groups were identical at 20% (n=3) in CT group and 20% (n=2) in CT-RT group (p = 1.000).
- 85.7% (n=12) of patients in the CT group had an R0 resection, compared to 66.7% (n=6) in the CT-RT group (p = 0.343).
- The CT group had statistically significant lower mortality rate at 0% when compared to the CT-RT group at 40% (n=4) (**p = 0.017).**

DISCUSSION

Recent studies have shown that selected patients with LARC may achieve low rates of local recurrence with radiation sparing neoadjuvant therapy. Our data supports this and suggests that routine pelvic radiation can be safely omitted in well selected patients who gain no additional benefit from neoadjuvant chemoradiation over chemotherapy, sparing them unnecessary radiation toxicity and complications.

REFERENCES

1. Schrag D, Weiser MR, Goodman KA, et al. Neoadjuvant chemotherapy without routine use of radiation therapy for patients with locally advanced rectal cancer: a pilot trial. *J Clin Oncol*. Feb 20 2014;32(6):513-8. doi:10.1200/JCO.2013.51.7904
2. Schrag D, Shi Q, Weiser MR, et al. Preoperative treatment of locally advanced rectal cancer. *N Engl J Med*. 2023;389(4):322-334. doi:10.1056/NEJMoa2303269
3. Bosse D, Mercer J, Raissouni S, et al. PROSPECT Eligibility and Clinical Outcomes: Results From the Pan-Canadian Rectal Cancer Consortium. *Clin Colorectal Cancer.* Sep 2016;15(3):243-9. doi:10.1016/j.clcc.2016.02.003