

Trends in Circulating Tumor DNA in Rectal Cancer Patients: A Single Institution Experience

Assar Rather, Adrienne Fisher, Iftexhar Khan, Rishi Sawhney, Bhavin Dave, Lindsay Grasso

Bayhealth Medical Center, Dover, DE

Background

- Circulating tumor DNA (ctDNA) offers a longitudinal assessment of a tumor throughout disease management
- There is limited data evaluating the use of ctDNA in rectal cancer
- With a shift towards more individualized rectal cancer care there is potential for ctDNA to be used as an objective tool to monitor therapy and adjust the treatment plan

Methods

- Retrospective chart review of patients with a confirmed diagnosis of adenocarcinoma of the rectum across all stages with baseline ctDNA
- 16 patients were identified and a total of 57 plasma samples were analyzed
- A tumor-informed, personalized ctDNA assay (Signatera™, bespoke mPCR-NGS assay) was utilized to measure plasma ctDNA level expressed as mean tumor molecules (MTM)/mL

Figure 1. Flow diagram of ctDNA testing cadence

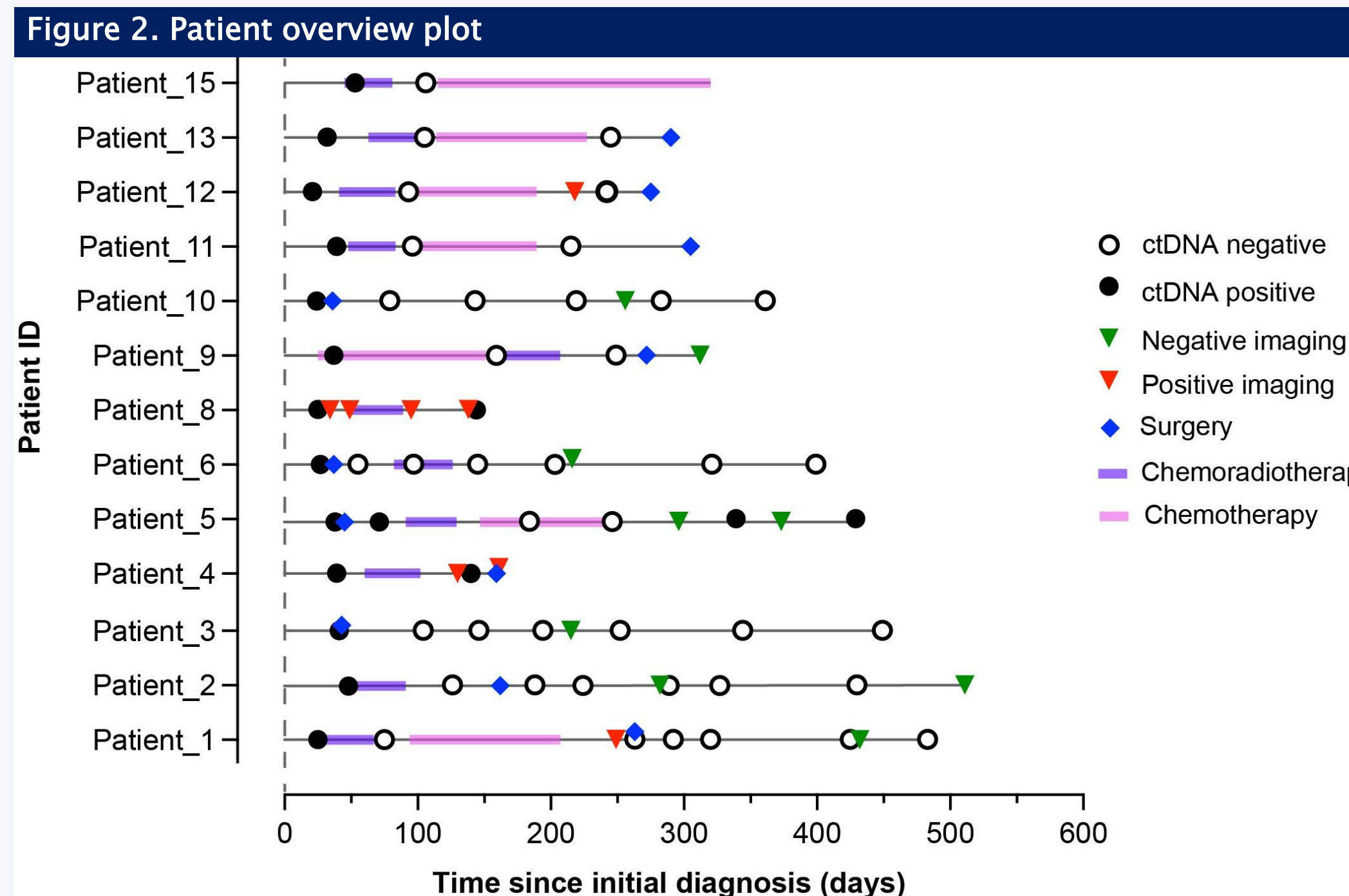
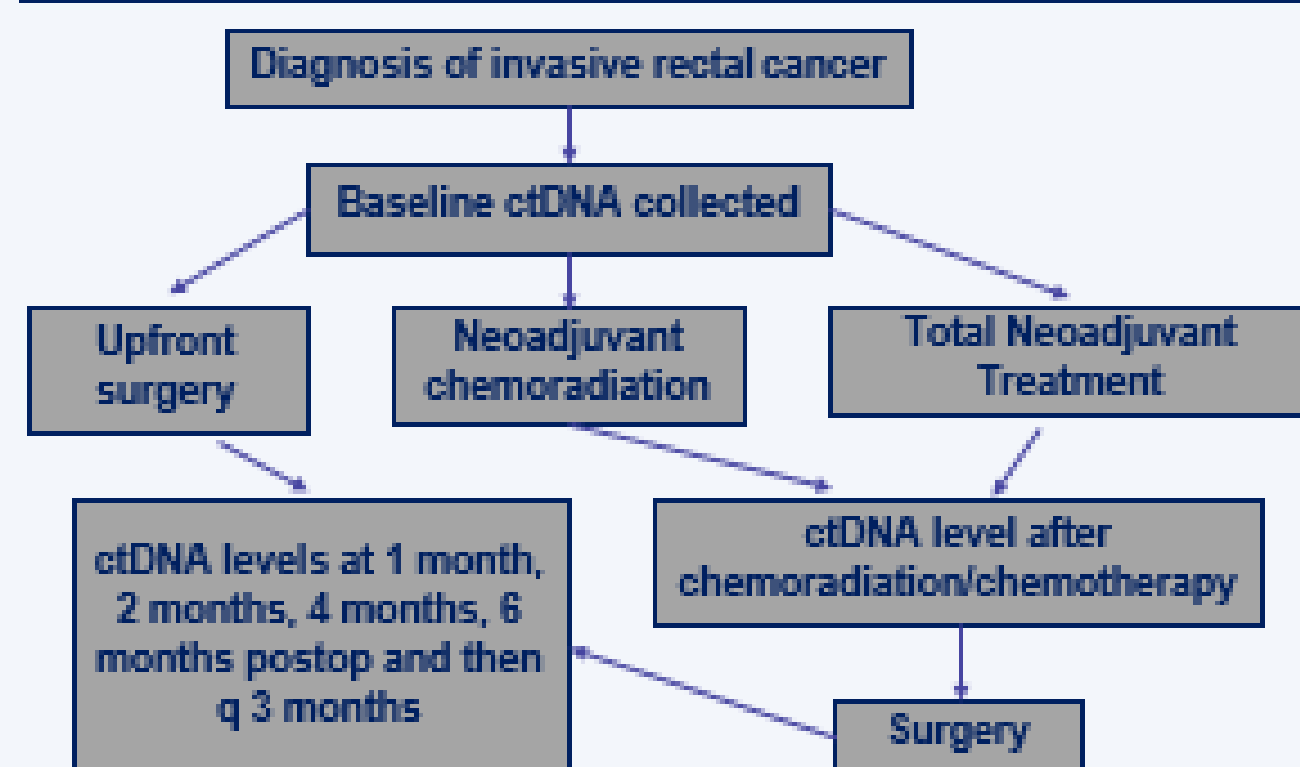


Figure 2.

- In our cohort, all 16 (100%) patients had a positive ctDNA at baseline.
- 11 patients cleared ctDNA after some form of treatment
- There were 4 patients who had upfront surgical resection, 3 of the 4 patients cleared ctDNA after surgery. One patient (patient 5) had stage IIIb disease and did not clear ctDNA until after starting adjuvant treatment. Since completing adjuvant treatment patient 5 has had 2 positive ctDNA results without radiologic evidence of disease recurrence.
- Of the 12 patients that received neoadjuvant treatment 1 patient had complete pathologic response (patient 13), 2 patients had near complete pathologic response (patient 1 and 11), and 3 had partial pathologic response (patient 2, 9, 12).
- There was 2 patients who had progression of disease which correlated with rising ctDNA levels (patient 4 and 8).
- Excluded from the figure are patient 14 and 16 whom had baseline ctDNA levels and are currently receiving neoadjuvant treatment. Patient 7 was lost to follow-up after completing induction chemotherapy.

Table 1. Patient Characteristics and Demographics (n=16)

Patient characteristics		# of patients (%)
Median age at diagnosis (range)		67.5 years (44-86)
Sex	Male	9 (56%)
	Female	7 (44%)
Stage at diagnosis	I	2 (12.5%)
	II	2 (12.5%)
	III	10 (62.5%)
	IV	2 (12.5%)
Initial treatment	Surgery	4 (28%)
	TNT*	9 (56%)
	Neoadj CRXT**	3 (19%)
Baseline CEA expressed	Yes	7 (44%)
	No	9 (56%)

*Total Neoadjuvant Treatment **CRXT – concurrent chemo and radiation therapy

Conclusions

- This exploratory study demonstrates the feasibility of ctDNA-based molecular residual disease monitoring in patients with rectal cancer
- Our data suggests a correlation between ctDNA clearance and response to treatment, potentially offering an opportunity to monitor therapeutic efficacy and tailor therapy
- Larger prospective studies are needed to explore the potential role of ctDNA in the management of rectal cancer patients

Acknowledgments: Karen Lin and Charuta Palsuledesai from Natera, Inc.

