



Clinical Summary Series

HAI Therapy for Adjuvant Applications in CRLM

Recurrence patterns after complex multimodality therapy and hepatic arterial infusion for colorectal liver metastases: A reflection of biology and technique.

Hernandez MC, Fan D, Sandhu J, Mahuron K, Kessler J, Raoof M, Fakih M, Singh G, Fong Y, Melstrom LG.

J Surg Oncol. 2024;129(7):1254-1264.

BACKGROUND

Recurrence following resection and/or ablation of colorectal liver metastases (CRLM) remains common, with the liver representing the dominant site of failure. Hepatic artery infusion (HAI) delivers high concentrations of floxuridine directly to the liver and was shown to improve overall survival in the adjuvant setting.¹ However, contemporary data describing recurrence patterns and survival outcomes following adjuvant HAI in patients undergoing combined resection and ablation are limited. The study by Hernandez et al. sought to characterize recurrence patterns and survival outcomes associated with adjuvant HAI in this clinical setting.

METHODS

This was a retrospective, single-institution cohort study of patients who underwent curative-intent resection and/or ablation of CRLM between 2017 and 2021. Patients were grouped according to receipt of hepatectomy and ablation with or without adjuvant HAI therapy. Recurrence patterns (overall, hepatic, ablation-site, and extrahepatic) and overall survival (OS) were evaluated. Subgroup analyses were performed for patients with liver-limited disease.

RESULTS

A total of 184 patients were included: 60 received adjuvant HAI and 124 did not. Patients in the HAI cohort had a higher intrahepatic tumor burden at baseline but were less likely to have extrahepatic disease.

Hepatic recurrence was significantly lower in the HAI group compared with the non-HAI group (45.0% vs. 70.9%), corresponding to a 37% relative reduction in risk of recurrence. Both ablation-site recurrence and de novo intrahepatic recurrence occurred less frequently among patients receiving HAI. Rates of extrahepatic recurrence were similar between treatment groups.

In the overall cohort, median OS was numerically longer with HAI (85 months) than without HAI (60 months), though this difference did not reach statistical significance. Among patients with liver-limited disease, adjuvant HAI was associated with a statistically significant improvement in OS (100 vs. 73 months).

1. Kemeny N, et al. *N Engl J Med.* 1999;341(27):2039–48

Adjuvant hepatic artery infusion (HAI) therapy after multimodal colorectal cancer liver metastasis (CRLM) resection was associated with a 37% relative reduction in liver recurrence, including both ablation site and de-novo lesions.



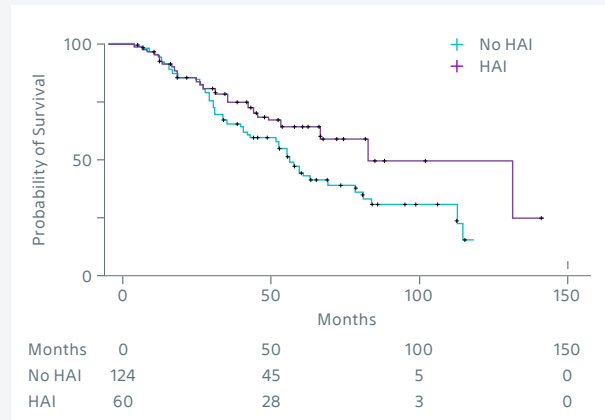
INTERA 3000™ Hepatic Artery Infusion Pump

Recurrence Patterns After Multimodal Treatment

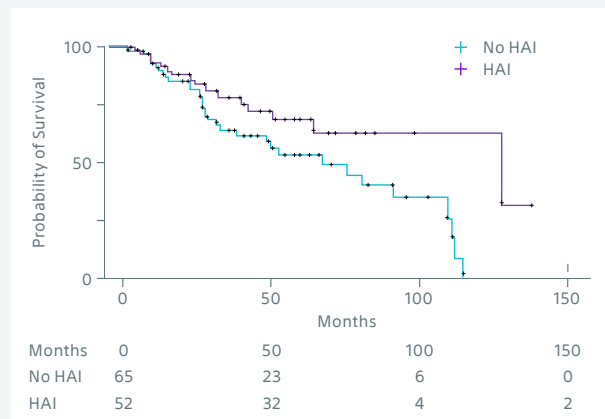
	Ablation + Resection + HAI (n = 60)	Ablation + resection (n = 124)	P value
Recurrence at ablation site	26.7%	42.7%	0.04
De novo liver recurrence	11.6%	25%	0.04
Any liver recurrence	45%	70.9%	0.001
mOS all patients	85 months	60 months	0.06
mOS patients w/ no EHD	100 months	73 months	0.04

Abbreviation: HAI, hepatic artery infusion.

Overall Survival: Entire Cohort (from Surgery)



Overall Survival: No Extrahepatic Disease (from Surgery)



TAKEAWAYS

- Liver recurrence remains the predominant mode of failure following resection and ablation of CRLM.
- Adjuvant HAI was associated with a meaningful reduction in hepatic recurrence, including both ablation-site and de novo liver lesions.
- The benefit of HAI appears to be liver-specific, with no observed reduction in extrahepatic recurrence.
- Overall survival benefit was most evident in patients with liver-limited disease at baseline, supporting patient selection as a key consideration.

CONCLUSIONS

In this retrospective analysis, adjuvant HAI chemotherapy following resection and ablation of CRLM was associated with significantly improved hepatic disease control. While overall survival improvement in the full cohort was not statistically significant, a significant OS benefit was observed among patients with liver-limited disease. These findings reinforce the role of HAI as a liver-directed strategy aimed at reducing intrahepatic recurrence and support its use in appropriately selected patients.

LIMITATIONS

- Retrospective, single-institution design
- Baseline imbalances may confound outcomes
- Systemic chemotherapy regimens not standardized



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