Outcomes after Liver Resection and Multidisciplinary Management of Gastroenteropancreatic Neuroendocrine Tumour Liver Metastases

Fehr, A.*, Bhatia, P.*, Gray, D.*, Kocha, W. ‡, Reid, R.**, Elliott, J.^, Mujoomdar, A.^, Howlett, C. †, Vasquez, A.*, Quan, D.*
Departments of Surgery*, Oncology‡, Nuclear Medicine**, Pathology†, and Radiology^
The University of Western Ontario, London Health Sciences Centre, London, Ontario, Canada

Background

- Metastatic liver disease from neuroendocrine tumours (mNETs) has a significant impact on prognosis. Complete surgical resection remains the only potentially curative therapy for mNETS.
- Surgical resection is limited in patients with mNETs due to large tumour burden and/or anatomical location. Therefore surgical resection is only plausible in approximately 10% of patients[1].
- Along with surgery, various other treatment options are available. Treatment with **multiple modalities** is becoming the standard of care by which mNETs is managed.
- Few studies have looked directly at liver resection versus multimodality treatment outcomes in this patient population.

Objective

- To describe outcomes after liver resection (LR) of mNETs in patients with and without a multimodal approach.

Methods

- Retrospective analysis of patients undergoing liver resection for mNET at London Health Sciences Centre between 2004 and 2010 was performed.
- Clinical data was retrieved from electronic and paper records, and pathologic data was acquired via retrieval and histologic analysis of tumour specimens in the tumour database.
- Local ethics board approval was obtained.

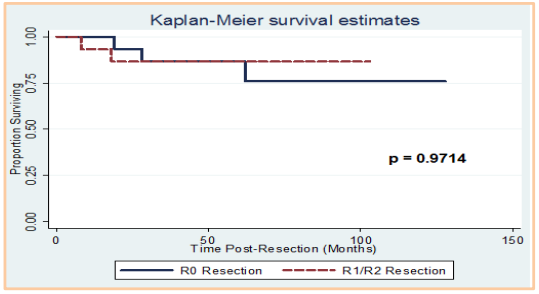
Results

- 35 liver resections in 30 patients for mNET.
- Median age of the patients was 56.5 years.
- Primary Tumor Location
  - Primary Intestinal NET: 19 (63.3%)
  - Pancreas: 6 (20%)
  - Unknown: 3 (10%)
  - Breast: 1 (3.3%)
  - Cystic Duct: 1 (3.3%)
- Postoperative morbidity was 31%
  - Clavien Grade I and II 9 (26%)
  - Clavien Grade IIIa 2 (5%)
- Comparing those who received preoperative multimodality treatment (n= 10) versus those that did not (n= 25), there was no statistically significant impact on postoperative morbidity. There was a trend to increased R0 resection with preoperative treatment but was also not statistically significant.

Results – Overall Survival

	Patients Undergoing Liver Resections (n=30)
Mean Follow up (Months)	56
Overall Survival (%)	25 (83.3%)

Results – Survival (R0 vs. R1/R2)



Results – Survival (Multimodality vs. Surgery Alone)

- All five deaths in our series received pre and/or post op chemothearpy while there were no deaths in the surgery only group (p=0.016).
- Of the five deaths:
  - Only one had G1 disease
  - Two had extraintestinal primary (pancreas, breast) and two had unknown primary
  - Four had systemic chemotherapy

Results – Recurrence After R0 Resection

	n = 15	Recurrence	Median Time To Recurrence (Months)
No Multimodality Treatment	9	4 (44%)	14
Preoperative and/or Postoperative Treatment (Systemic Chemotherapy, TACE, and PRRT)	6	6 (100%)	8

Conclusions

- Liver resection for mNETs shows an overall favourable outcome for this contemporaneous group of patients.
- There was no significant difference in survival regardless of completeness of resection.
- There was a disadvantage to survival with preoperative and/or postoperative multimodality therapy.
  - This may be due to selection bias and lead time bias with regard to treatment before surgical evaluation of the mNETs in many of the patients
  - Patients receiving multimodality therapy in our series had tumors with more negative prognostic factors than the surgery alone group.
- Prospective studies are needed to determine the actual effect of multimodality treatment.
- Treatment strategies for mNETs patients should be discussed by a multidisciplinary team.

References

1. S. C. Mayo, M. C. de Jong, M. Bloomston et al., "Surgery versus intra-arterial therapy for neuroendocrine liver metastasis: a multicenter international analysis," Annals of Surgical Oncology. In press.