Management of Metachronous Liver Metastasis from Colorectal Cancer

Kings County Hospital

June 6, 2013
Case presentation

- 65 year old female
- PMH: HTN, DM, Arthritis
- PSH: oophorectomy
- SH: denied tobacco, alcohol or illicit drugs
- FH: denied colon cancer
- Meds: Metformin
- NKDA
Case Presentation

- 6/13/12: Screening colonoscopy revealed a mass in proximal sigmoid
- Preoperative CXR/abdomen/pelvis were negative for metastatic disease
- 6/25/12: Laparoscopic Sigmoid resection
- Pathology: Moderately differentiated adenocarcinoma, 3.5cm, penetrates through muscularis propria into pericolonic fat; negative lymphovascular invasion; 0/14 LN; proximal and distal margins negative; T3N0Mx; stage 2A
Case Presentation

• 3/12/13: CEA 45 from 1.87
• 3/25/13: CT chest – 3mm nodule in right apex
• 4/13/13: MRI abdomen – metastatic lesions in segments III, IVB, V, VI, VII, VIII; largest measures 4.6x4.1 cm in segment VIII
Case Presentation

- 4/24/13: Extended right hepatectomy, cholecystectomy, metastasectomy of left liver for two lesions using intraoperative ultrasound
- 5/13/13: Chemoport placement
- Path: Metastatic adenocarcinoma, moderately differentiated, consistent with colonic primary
Questions?
Nomenclature

• Right liver lobectomy
  – Resection of segments 5-8
• Left liver lobectomy
  – Resection of segments 2-4
• Extended right hepatectomy (Right Trisegmentectomy)
  – Resection of segments 4-8
• Extended left hepatectomy (Left Trisegmentectomy)
  – Resection of segments 2-5 and 8
Liver Segments

A. Anterior view

- Anatomical lobes
  - Right lobe
  - Left lobe

- Functional lobes
  - Right lobe
  - Left lobe

- Right posterior medial segment (VIII)
- Right posterior lateral segment (VII)
- Right anterior lateral segment (VI)
- Right anterior medial segment (V)
- Left posterior lateral segment (II)
- Left anterior lateral segment (III)
- Left medial segment (IV)
- Left posterior lateral segment (I)
- Falciform ligament
- Gallbladder
The liver is the first major organ reached by venous blood draining the GI tract
- 50,000 cases of colorectal liver metastases (CLM) a year in the United States
- Half of patients resected of CRC primary will eventually develop metachronous liver metastasis
- 5-10% may be candidates for curative resection

Changes in management of CLM over the decades
- Prior to the 1980s, liver resection was rarely performed for CLM
- Median survival of untreated CLM is 5-10 months
- However, a small subset of patients survived past 5 years
- Improvement in chemotherapy regimens imparted a survival benefit
- Median survival of chemotherapy treated CRC liver metastases is 21 months
Clinical score for predicting recurrence after hepatic resection for metastatic colorectal cancer: analysis of 1001 consecutive cases.

Fong Y, Fortner J, Sun RL, Brennan MF, Blumgart LH. Hepatobiliary Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York City, New York 10021, USA.

Abstract

OBJECTIVE:
There is a need for clearly defined and widely applicable clinical criteria for the selection of patients who may benefit from hepatic resection for metastatic colorectal cancer. Such criteria would also be useful for stratification of patients in clinical trials for this disease.

METHODS:
Clinical, pathologic, and outcome data for 1001 consecutive patients undergoing liver resection for metastatic colorectal cancer between July 1985 and October 1998 were examined. These resections included 237 trisegmentectomies, 394 lobectomies, and 370 resections encompassing less than a lobe. The surgical mortality rate was 2.8%.

RESULTS:
The 5-year survival rate was 37%, and the 10-year survival rate was 22%. Seven factors were found to be significant and independent predictors of poor long-term outcome by multivariate analysis: positive margin (p = 0.004), extrahepatic disease (p = 0.003), node-positive primary (p = 0.02), disease-free interval from primary to metastases <12 months (p = 0.03), number of hepatic tumors >1 (p = 0.0004), largest hepatic tumor >5 cm (p = 0.01), and carcinoembryonic antigen level >200 ng/ml (p = 0.01). When the last five of these criteria were used in a preoperative scoring system, assigning one point for each criterion, the total score was highly predictive of outcome (p < 0.0001). No patient with a score of 5 was a long-term survivor.

CONCLUSION:
Resection of hepatic colorectal metastases may produce long-term survival and cure. Long-term outcome can be predicted from five criteria that are readily available for all patients considered for resection. Patients with up to two criteria can have a favorable outcome. Patients with three, four, or five criteria should be considered for experimental adjuvant trials. Studies of preoperative staging techniques or of adjuvant therapies should consider using such a score for stratification of patients.
Data

- Primary tumors were colon and rectum
- Age and sex of patients were equivalent
- Number of liver tumors ranged from 1-20
- Size of liver tumors ranged from 1-26 cm
- Most commonly performed right lobectomy followed by extended right hepatectomy and wedge resection
- All five clinical criteria tested were independent risk factors for adverse outcome; each assigned one point for a maximum score of 5
Table 5. CLINICAL RISK SCORE FOR TUMOR RECURRENCE

<table>
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<tr>
<th>Score</th>
<th>1-yr</th>
<th>2-yr</th>
<th>3-yr</th>
<th>4-yr</th>
<th>5-yr</th>
<th>Median (mo)</th>
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Each risk factor is one point: node-positive primary, disease-free interval <12 months, >1 tumor, Size >5 cm, CEA >200 ng/ml.
Prediction of long-term outcome for small (<3 cm) metastatic deposits (n = 293). Correlation of long-term outcome with clinical risk score. For a score of 0 to 2 (n = 236) (open box), the median survival was 56 months and the 5-year survival rate was 47%. For a score of 3 or 4 (n = 57) (filled triangles), the median survival was 32 months and the 5-year survival rate was 24%.
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<th>5-Year</th>
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Current surgical management

• Surgical resection is the most effective therapy for metastatic colorectal cancer isolated to the liver and is the only therapy to date to be potentially curative

• As much as 80% of the liver can be resected with an associated surgical mortality rate less than 5% in patients with normal hepatic reserve

• As the safety of hepatic resection has improved with more surgeons becoming proficient in the technical aspects of liver resection, patient selection criteria becomes increasingly important to distinguish patients who will benefit from invasive therapy and those who should be considered for neoadjuvant or trial drug therapy

• Improved median survival depends on a multidisciplinary approach to patient selection and therapy

• The surgical anatomy pertaining to liver resection. GOLDSMITH NA, WOODBURNE RT; Surg Gynecol Obstet. 1957 Sep; 105(3):310-8.


• Current Surgical Therapy: Expert Consult, 10e ; John L. Cameron MD FACS FRCS, Andrew M Cameron MD PhD