Colon Cancer - Overview

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Case Presentation

- 61 yo female with a history of HTN presents for colon resection of a mass found on screening colonoscopy.

- PSH - denies
- Family hx – denies
- PE - unremarkable
Hospital Course

- Labs wnl (including tumor markers)
- CT Scan – no evidence of hepatic metastases
- Patient underwent a left hemicolecctomy with an uneventful hospital course.
- Path – adenocarcinoma (T2N0Mx)
Introduction

- 4th most common malignancy
- 2nd leading cause of cancer-related deaths
- Portion within the peritoneal cavity, from the cecum to the peritoneal reflection
- Approximately 70% Of all large bowel cancer
- Requires a multidisciplinary team
Frequency

- Cecum: 17% (15%)
- Ascending Colon: 12% (6%)
- Transverse Colon: 13% (13%)
- Descending Colon: 4% (6%)
- Sigmoid Colon: 23% (25%)
- Rectum: 18% (21%)
- Rectosigmoid Junction: 10% (10%)
Progression from normal mucosa through adenoma to carcinoma

Inactivation of the adenomatous polyposis coli (APC) gene on chromosome 5q
Risk Factors

- Family history of cancer or adenomatous polyps (>5% of CRC)
- Inflammatory bowel disease
  - lifetime risk with ulcerative colitis is 3.7%
- Dietary
- Lifestyle factors

Screening

- Reduces cancer-related mortality
- Goal - detect early-stage cancer and premalignant adenomatous polyps
- Methods include
  - colonoscopy
  - flexible sigmoidoscopy
  - barium enema
  - fecal occult blood testing (FOBT)
  - computed tomographic colography or virtual colonoscopy is gaining acceptance in selected circumstances.
Screening

- Recommended to begin at age 50
- Screening options include
  - colonoscopy every 5 to 10 years
  - flexible sigmoidoscopy every 5 years
  - annual FOBT
  - or a combination of these

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Presentation

- Most common presenting symptoms
  - blood per rectum
  - anemia
  - change in bowel habits
  - change in stool character

- Based on location
Diagnosis

- **History**
  - Assess comorbid conditions
  - Determine the possibility of a familial or hereditary syndrome

- **Physical examination**
  - Hepatomegaly, adenopathy or an abdominal mass.
  - Rectal exam

- **Complete colonoscopy**
  - Histologic diagnosis
  - Rule out synchronous polyps or cancers (3-11%)
  - Tattooing

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Work-up

- Laboratory
  - Routine labs
  - Tumor marker – CEA
  - Liver function tests

- Radiologic studies
  - CT Scan of A/P
  - PET-CT Scan
Staging - CRC

As the image contains a detailed diagram of the Staging - CRC, it illustrates the different stages from A to D, indicating the progression of colorectal cancer. The stages are differentiated by the depth of invasion and the presence of lymph node involvement. The diagram also highlights the layers of the colon, including the mucosa, submucosa, muscularis, and the lymph node regions. The liver and lungs are depicted with red spots indicating potential distant metastases. The image is credited to WebMD Inc. with all rights reserved.
Staging

- Stage 0 - Tis, N0, M0
- Stage I - T1, N0, M0 / T2, N0, M0
- Stage IIA - T3, N0, M0
- Stage IIB - T4, N0, M0
- Stage IIIA - T1, N1, M0 / T2, N1, M0
- Stage IIIB - T3, N1, M0 / T4, N1, M0
- Stage IIIC - Any T, N2, M0
- Stage IV - Any T, Any N, M1
Surgical Management

- 80-90% of patients - appropriate candidates at presentation for an attempt at curative resection

- Depends on the stage at presentation
  - localized and potentially curable disease,
  - advanced incurable disease
    - locally symptomatic disease
**Colon Resection**

- **Goals**
  - complete removal of the primary cancer
  - anatomically complete lymphadenectomy
  - en bloc resection of any involved adjacent organs

- **Extent** - determined by the vascular pedicles to achieve an adequate regional lymphadenectomy
Technique

- Resection of a larger segment of bowel beyond that necessary simply to obtain negative margins.
- Removal of pericolic and intermediate draining lymph nodes as part of a curative resection.
- Between vascular pedicles - extended colectomy to remove nodes along both associated vascular pedicles.
- More extensive colonic resections, including subtotal or total colectomy - multiple tumors or prophylactic for those at risk for metachronous disease.
Intra-operative consideration

- Curative – abdominal exploration for evidence of metastatic disease.
- Particularly the liver, the most common site for metastatic disease.
  - Visualization and careful manual palpation of the liver should be conducted, including the periportal nodal region.
  - Intraoperative ultrasound (IOUS) can be used in some cases to assess the liver more carefully.
ExtendTime of Resection

- Tumors of the cecum and ascending colon - right hemicolecctomy
- Tumors of the transverse colon - transverse colectomy, including the middle colic and lymphatics.
- Left hemicolecctomy - descending colon mass and includes ligation of the left colic artery.
- For sigmoid cancers - left hemicolecctomy or a sigmoid colectomy may be performed
Laparoscopic vs Open

- The advantages
  - Reduction in length of hospital stay
  - Pain medication requirements

- Laparoscopic colon resections tend to
  - Take long to perform
  - Require more expensive operative equipment
  - Still require an incision for removing the specimen and performing the anastomosis.
Importance of Adequate Lymph Node Assessment

- Influences the accuracy of staging and the prognosis
- Principal current indication for the recommendation of postoperative adjuvant chemotherapy - regional lymph nodes
- National Comprehensive Cancer Network (NCCN) recommends - no fewer than 12 nodes be microscopically examined to determine the nodal status accurately
Adjuvant Therapy

- Among lymph node–positive patients - 30% to 70% develop recurrence and eventually die.

- The goal of adjuvant therapy - provide additional treatment to those patients most likely to experience recurrence.
Indications

- Stage III disease
- Stage II patients with other poor prognostic features.
  - poorly differentiated histology
  - vascular or lymphatic invasion
  - bowel obstruction
  - T4 tumor
  - fewer than 12 lymph nodes evaluated

- Choice of adjuvant - fluoropyrimadine based, including 5-fluorouracil (5FU) and leucovorin (LV) or oral capecitabine.

- Recent randomized studies - improved survival of infusion 5FU-LV with oxaliplatin (FOLFOX) over 5FU-LV alone in patients for postoperative adjuvant therapy for colon cancer.

- Unlike with rectal cancer, adjuvant radiation therapy for colon cancer is rarely indicated
Follow-up

- Goal - detect any recurrences or metachronous lesions that are potentially curable

- CEA levels - every 2 to 3 months for 2 years, then every 3 to 6 months for 3 years, then annually.

- 2. Clinical examination every 3 to 6 months for 3 years, then annually.

- 3. Colonoscopy perioperatively, then every 3 to 5 years if the patient remains free of polyps and cancer (the NCCN also recommends colonoscopy 1 year after primary therapy).
Isolated Liver Metastases

- Resection with 5 yr survival – 30%
- Independent predictors of poor outcome:
  - (1) node-positive primary disease
  - (2) a disease-free interval shorter than 12 months
  - (3) the presence of more than one hepatic tumor
  - (4) a maximum hepatic tumor size exceeding 5 cm
  - (5) a CEA level higher than 200 ng/ml.

Patients with no more than two of these criteria - good outcomes
Liver Metastases – unresect.

- Modalities include
  - Cryotherapy
  - Radiofrequency (RF) ablation – Most common. It may be performed via an open approach, percutaneously, or laparoscopically; it may also be combined with resection and with local or systemic chemotherapy
  - Hepatic artery infusion of chemotherapeutic agents
Isolated lung metastases from CRC

- May also benefit from surgical resection.
- Some series have reported 5-year survival rates higher than 40% after complete resection.
- Patient selection remains a major issue.
- Prognostic factors that may predict poor outcomes include
  - maximum tumor size greater than 3.75 cm
  - serum CEA level higher than 5 ng/ml
  - pulmonary or mediastinal lymph node involvement
  - patients with both pulmonary and hepatic metastases may also be considered for surgical resection

QUESTIONS?

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