COLON CANCER

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Colorectal Cancer

- 90% of cases occurs after age 50.
- Third leading cause of cancer in the US
- Second leading cause of cancer death
- Average lifetime risk for developing this cancer is 6%
- Men and women are affected equally
- Women are more likely to have right sided colonic adenomas
- Distributed evenly among various racial groups
- African Americans and Hispanics have lower survival rate
Risk Factors

- Age >50 yrs
- High fat, low fiber diet
- IBS – Chronic ulcerative colitis and Crohn’s disease
- Familial adenomatous polyposis (FAP)
- Hereditary nonpolyposis colorectal cancer (HNPCC)
- Hamartomatous polyposis syndromes
- Peutz-Jeghers syndrome
- Juvenile polyposis
- Family history – Colorectal adenomas, Colorectal cancer
- Personal history of Colorectal adenomas, Ureterosigmoidostomy, Breast, Ovarian and Uterine cancers
Now a huge, 20-year study from the American Cancer Society confirms the findings that: Those who eat the most red meat -- beef and/or pork and/or processed meat products -- get colon cancer 30% to 40% more often than those who eat these foods only once in a while.

The news is particularly bad for those who favor lots of lunchmeats, hot dogs, and sausages. Eating lots of these processed foods raises colon cancer risk by 50%, reports Marjorie L. McCullough, ScD, senior epidemiologist at the American Cancer Society in Atlanta. McCullough and colleagues report the findings in the Jan. 12 issue of The Journal of the American Medical Association.
The people who ate the most red meat (about 5 ounces a day or more) were about a third more likely to develop colon cancer than those who ate the least red meat (less than an ounce a day on average). Their consumption of chicken did not influence risk one way or the other, but a high consumption of fish appeared to reduce the risk of colon cancer by about a third.
Increasing incidence of colorectal cancer with age. The age-specific incidence of colorectal cancer in the general population was measured between 1988 and 1992 in men and women of all races. (Data from Surveillance, Epidemiology, and End Results (SEER) Program, 1973-1992.)

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Prevalence of adenomatous colonic polyps increases with age

Adenomatous colonic polyps are found in about 25 percent of people by the age of 50; the prevalence continues to increase with increasing age. Data from Williams, AR, Balasooriya, BA, Day, DW, Gut 1982; 123:835.
Approximate Life time risk of Colon cancer

Familial setting

Gen population risk in US
1 first degree relative with colon cancer
2 first degree relatives with colon cancer
1\textsuperscript{st} relative \( \Delta \) with colon cancer \( \leq 50 \) yrs
One 2\textsuperscript{nd} or 3\textsuperscript{rd} \degree relative with colon cancer
Two 2\textsuperscript{nd} \degree relatives with colon cancer
One 1\textsuperscript{st} \degree relative with polyp

6%
Two-Three fold increase
Three-Four fold increase
Three-Four fold increase
1.5 fold increase
Two-Three fold increase
Two fold increased
Colonic polyps  Over 95 percent of colonic polyps are hyperplastic or adenomatous. Although these two types have some distinctive features on gross appearance, they cannot be reliably distinguished endoscopically. Panel A: typical small sessile hyperplastic polyp that is less than 5 mm in size. Panel B: typical pedunculated adenomatous polyp. Courtesy of James B McGee, MD.
Incidence of colorectal cancer according to age and family history

Graphic representation of the cumulative incidence of colorectal cancer demonstrates that in people with a family history, colorectal cancers occur earlier in life, not uncommonly in the 40s or even the 30s. Data from Fuchs, CS, Giovannucci, EL, Colditz, GA, et al. N Engl J Med 1994; 331:1669.
**Risk of colon cancer associated with a family history**  The highest risk is in people with multiple first-degree relatives or relatives who have developed colorectal cancer at a relatively young age. Data from Johns, LE, Houlston, RS, Am J Gastroenterol 2001; 96:2992.

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**Familial adenomatous polyposis** Gross specimen of the colon from a patient with familial adenomatous polyposis shows innumerable small polyps. Courtesy of Robert Odze, MD.

**Familial adenomatous polyposis** Endoscopic findings at multiple levels in a 50 year-old man with familial adenomatous polyposis. Multiple polyps of various sizes are seen. At colectomy, some of these polyps had areas of dysplasia and early malignant transformation. Courtesy of James B McGee, MD.
Cumulative incidence of colorectal cancer

Cumulative Incidence of Colorectal Cancer by Age in Subjects with Genetic Syndromes Compared with the General Public†

Cumulative Incidence of CRC in Siblings of Patients with Adenomas

Clinical Presentation

• Depends on tumor location

• Proximal (right sided) lesions present with symptoms caused by anemia – fatigue, weight loss, shortness of breath, lightheadedness, mahagony feces caused by occult bleeding

• Distal (left sided) lesions present with symptoms of obstruction, changes in BM pattern, postprandial colicky abdominal pain, hematochezia
CLINICAL MANIFESTATIONS

• Abdominal pain 44%
• Change in bowel habit 43%
• Hematochezia or melena 40%
• Weakness 20%
• Anemia without other gastrointestinal symptoms 11%
• Weight loss 6%
• Some patients have more than one abnormality
• 15 to 20% of patients have distant metastatic disease at the time of presentation
Diagnostic Tests

• Digital rectal exam (DRE)
• Barium enema (BE) with or without air contrast: used primarily to locate deformities of intestinal topography
• Sigmoidoscopy, rigid type or flexible fiber optic type: used to visualize local rectal tumors or for routine screening
• Colonoscopy (or colon endoscopy): Direct visual examination of the colon and rectum detects early polypoid tumors preoperatively and recurrences post-resection; Multiple biopsies may be performed at time of study to increase sensitivity
• Computed tomography (CT): Used to stage disease and identify metastases
• Transrectal ultrasound (TRUS): An excellent choice for preoperative staging of rectal carcinomas
• Magnetic resonance imaging (MRI): very useful for diagnosing metastatic disease
• Laparotomy: Useful in detecting metastases to abdominal regions (especially omentum or liver) that often remain undetected by current imaging techniques
Prognosis and 5 year survival rates for Colon Cancer

- Stage I (T1-2N0) - 93%
- Stage IIA (T3N0) - 85%
- Stage IIB (T4N0) - 72%
- Stage IIIA (T1-2 N1) - 83%
- Stage IIIB (T3-4 N1) - 64%
- Stage IIIC (N2) - 44%
- Stage IV - 8%

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Guidelines for screening average risk adults aged 50 years or older

• Fecal occult blood test (FOBT) every year
  – Occult stool testing must be repeated at least 3 times on different stool samples.
  – Diet must be free of peroxidase activity (turnips & horseradish).
  – Tests may need to be repeated if there is a history of:
    • Usage of possible gastric irritants such as salicylates, other anti-inflammatory agents
    • Hemorrhoids
    • Diverticulitis
    • Peptic ulcer disease (PUD) or other cause of GI bleeding
Guidelines for screening average risk adults aged 50 years or older

- Fecal occult blood test (FOBT) every year
- Flexible sigmoidoscopy every five years
- FOBT every year combined with flexible sigmoidoscopy every five years.
- Double-contrast barium enema every five years
- Colonoscopy every ten years
Screening for high-risk people

- A first-degree relative (sibling, parent, child) who has had colorectal cancer or an adenomatous polyp:
  Screening should begin at age 40 years

- Family history of familial adenomatous polyposis (FAP):
  Screening should begin at puberty
  Sigmoidoscopy - annually, beginning at age 10 to 12 years
  Colonoscopy - every five years

- Family history of hereditary nonpolyposis colorectal cancer (HNPCC):
  Screening should begin at age 21 years
  Sigmoidoscopy - annually, beginning at age 10 to 12 years
  Colonoscopy - every one to two years, beginning at age 20 to 25 years or 10 years younger than the earliest case in the family, whichever comes first

- Personal history of adenomatous polyps
  Screening should be based on pathological findings
  Advanced or multiple adenomas (3 or greater): First follow-up colonoscopy should occur in 3 yrs
  1 or 2 small (< 1 cm) tubular adenomas: First follow-up colonoscopy should occur at 5 years

- Personal history of colorectal cancer:
  After colon resection
  Approximately six months after the surgery
  If the colonoscopy performed at six months is normal, subsequent colonoscopy should be repeated at 3 years and then if normal, every 5 years

- Personal history of inflammatory bowel disease
  Every one to two years after an eight year history of the disease with pancolitis or
  Every one to two years after 15 years history of left-sided colitis or
  For all patients beginning with eight to ten years of disease to document the extent of the disease
Genetic testing

• Genotyping (APC gene test) should be used when other diagnostic avenues are exhausted

• Medically necessary in presence of strong family history for familial adenomatous polyposis (FAP), attenuated familial adenomatous polyposis (AFAP), or hereditary nonpolyposis colorectal cancer (HNPCC)
Treatment Options

**Surgical excision:** Mainstay of curative Rx
- Specific procedure depends on the anatomic location of the cancer, but typically involves hemicolecctiony
- Surgical resection of affected bowel with clear margins, along with the adjacent mesentery and at least 12 regional nodes
- For rectal tumors, total mesorectal excision with a distal surgical margin of at least 2 cm is recommended
- For tumors that are located within 6 cm of the anal verge, or involve the anal sphincter, wide surgical resection with abdomino-perineal resection and permanent colostomy is recommended
- Local excision, for palliative treatment or simple polyp removal

**Radiation therapy:**
- Postoperative radiation, with or without chemotherapy, significantly reduces local recurrence rates
- Common regimen incorporates infusional 5-fluorouracil (5-FU) as a radiosensitizer to boost the efficacy of pelvic radiation
- Administered as 45 to 55 Gy over 5 weeks
- Repeated as needed
Treatment Options

SYSTEMIC CHEMOTHERAPY
• 5-FU has been the mainstay of systemic chemotherapy for CRC
• Capecitabine was approved in 2001 as first-line therapy for metastatic CRC
• Irinotecan (Camptosar), Oxaliplatin (Eloxatin), Bevacizumab, Cetuximab

Electrocoagulation
• Mostly palliative treatment for rectal carcinomas
• Curative for small subset of patients
Summary of Updated 2005 CRC Surveillance Guidelines from the American Society of Clinical Oncology

History and physical examination:
• Every 3 to 6 months for the first 3 yrs
• Every 6 months during years 4 and 5
• Then annually thereafter

CEA:
• Every 3 months for at least 3 yrs in pts with stage II or III CRC if they are candidates for surgery or systemic therapy

LFT’s, CBC, CXR and Fecal occult blood test:
Not recommended

Pelvic Imaging:
• Annual pelvic CT should be considered for rectal surveillance, particularly if the pt has not been treated with pelvic radiation therapy

Colonoscopy:
• In the pre-operative or post-operative setting to document a cancer free or polyp free colon
• Pts presenting with an obstructive cancer should undergo colonoscopy within 6 months of surgery.
• Repeat colonoscopy is recommended at 3 yrs, and if normal every 5 yrs thereafter

Flexible Proctosigmoidoscopy:
• Every 6 months for 5 yrs in pts who have not received pelvic radiation therapy,

CT of chest and abdomen:
• Pts with CRC at higher risk for recurrence (stage III or II with multiple poor risk features) should undergo annual CT of chest and abdomen for 3 yrs if they are eligible for curative intent surgery.
THANK YOU