GIT 4th lect.

Dr. mohamed Sabaa CH.
M.B.CH.B    M.Sc.pathology
Ischemic bowel disease

Ischemic lesions may be restricted to the small or large intestine, or may affect both, depending on the particular vessel(s) affected. Acute occlusion of one of the three major supply arteries of the intestines (celiac, superior mesenteric, and inferior mesenteric arteries) may lead to infarction of several meters of intestine. However, gradual occlusion of one vessel may be without effect, due to the rich anastomotic interconnections. Lesions within the end arteries, which penetrate the gut wall, produce small, focal ischemic lesions.
The predisposing conditions for ischemia are:
1. Arterial thrombosis complicating usually severe atherosclerosis.
2. Arterial embolism complicating cardiac vegetations and aortic atheroembolism.
3. Venous thrombosis complicating hypercoagulable states, oral contraceptives, intraperitoneal sepsis, etc.
4. Nonocclusive ischemia complicating cardiac failure, shock, dehydration, and vasoconstrictive drugs (e.g., digitalis, vasopressin, propranolol)
5. Miscellaneous such as radiation injury, volvulus, and internal or external herniae.
Hemorrhoids are essentially varices of the anal and perianal venous plexuses. They are extremely common affecting 5% of the general population. They develop secondary to persistently elevated venous pressure within the hemorrhoidal plexus. The most frequent predisposing influences are constipation with straining at stool and the venous stasis of pregnancy. Except for pregnant women, they are rarely encountered in persons under the age of 30.
The large intestine is responsible for more primary neoplasms than any other organ in the body. The vast majority are adenocarcinomas. The small intestine, despite its great length (3/4 of the GIT), is an uncommon site for benign or malignant neoplasms.
Tumors of the small intestine
The most common benign tumors in the small intestine are adenomas and mesenchymal tumors.
While malignant tumors adenocarcinomas and carcinoids have roughly equal incidence, followed in order by lymphomas and sarcomas.
Tumors of the Colon and Rectum

Non-neoplastic and benign neoplastic lesions of the colo-rectum are collectively known as polyps, which are common in the older adult population. Epithelial polyps that arise as the result of proliferation and dysplasia are termed adenomatous polyps (adenomas). They are precursors of carcinoma.
Non-Neoplastic Polyps include

1. hyperplastic polyp
2. hamartomatous polyp
3. inflammatory polyp
4. lymphoid polyp
Adenomas (Adenomatous polyps)

Adenomas are intraepithelial neoplasms that range from small, often pedunculated lesions to large neoplasms that are usually sessile. The prevalence of colonic adenomas increases progressively with age. Males and females are affected equally.

Adenomatous polyps are divided into three subtypes on the basis of the epithelial architecture:

1. Tubular adenomas: compose of tubular glands
2. Villous adenomas: composed of villous projections
3. Tubulovillous adenoma: composed of a mixture of the above two.
Familial Adenomatous Polyposis (FAP) Syndrome:
This is caused by mutations of the adenomatous polyposis coli (APC) gene on chromosome 5. In the classic FAP syndrome, affected patients typically develop 500 to 2500 colonic adenomas that carpet the mucosal surface; the presence of a minimum of 100 polyps is necessary for a diagnosis. The lifetime risk of cancer development is 100%. Some patients already have cancer of the colon or rectum at the time of diagnosis. Cancer-prevention measures include early detection of the condition and prophylactic colectomy.
A widely accepted proposal of carcinogenesis is the adenoma-carcinoma sequence, i.e. most carcinomas arise from preexisting adenomas. This has been supported by the following observations:
1. Populations that have a high prevalence of adenomas have a high prevalence of colorectal cancer.

2. The distribution of adenomas parallel that of colorectal cancer.

3. The peak incidence of adenomas precedes that of carcinoma by some years.

4. When invasive carcinoma is identified at an early stage, a related adenoma is often present.

5. The risk of cancer is directly related to the number of adenomas, that is why carcinoma complicates all those with FAP syndrome.

6. Removal of all adenomas that are suspicious reduces significantly the incidence of carcinoma.
98% of all cancers in the large intestine are adenocarcinomas. They usually arise in polyps and produce symptoms relatively early and at a stage generally curable by surgical resection. Yet, it is responsible for 10% of all cancer-related deaths. The peak incidence for colorectal carcinoma is between ages 60 and 79.
When colorectal carcinoma is found in a young person, pre-existing ulcerative colitis or one of the polyposis syndromes must be suspected. Environmental factors, particularly dietary practices, are implicated in the striking geographic variations in incidence. Japanese families that have migrated from their low-risk areas to the United States (high-risk areas) have acquired, over the course of 20 years, the rate prevailing in the new environment; mainly because the immigrants adopted the common dietary practices of the U.S. population.
The dietary factors receiving the most attention as predisposing to a higher incidence of cancer are

1. Excess dietary caloric intake relative to requirements

2. Low content of unabsorbable vegetable fibers & high content of refined carbohydrates.

3. Intake of red meat

Several epidemiological studies suggest that the use of aspirin and other nonsteroidal anti-inflammatory drugs exerts a protective effect against colon cancer.
Gross features:

- The rectosigmoid colon is the most frequent location (60%), followed by cecum/ascending colon (20%).
- Tumors in the proximal colon tend to grow as polypoid, exophytic masses; obstruction is uncommon. In the distal colon, they tend to be annular, encircling lesions that produce napkin-ring constrictions. The lumen is markedly narrowed leading to obstruction with secondary proximal distention.
- Both forms (polypoid and annular) directly penetrate the bowel wall over the course of time (probably years) and may appear as subserosal and serosal white, firm masses.
Microscopic features:

- The features of right- and left-sided colonic adenocarcinomas are similar.
- Differentiation (grade) may range from well-differentiated tumors to undifferentiated, frankly anaplastic masses.
- Invasive tumor provokes a strong desmoplastic (fibrotic) stromal response (responsible for the characteristic firm, hard consistency of most carcinomas).
- Carcinomas arising in the anal canal are mostly of squamous cell type.
Spread & metastasis

All colorectal tumors spread by direct extension into adjacent structures and by metastasis through the lymphatics and blood vessels. The favored sites of metastatic spread are the regional lymph nodes, liver, lungs, and bones. In general, the disease has spread beyond the range of curative surgery in 25% of patients. The single most important prognostic factor of colorectal carcinoma is the extent of the tumor at the time of diagnosis (stage). Currently, the staging system most widely used is the tumor-nodes-metastasis (TNM). The principal aim is to discover these neoplasms when curative resection is possible. Indeed, each death from colonic cancer must be viewed as a preventable tragedy.