

Acute enteritis

Acute enteritis - an acute inflammation of a small bowel.

Etiology. Frequently arises at many infections (cholera, typhoid, colibacillary, staphylococcal and virus infection contaminations, sepsis, lambliasis, etc.), it can appear especial at alimentary toxoinfections (salmonellosis, a botulism), poisoning (chemical poisons, toxicant funguses, etc.). It is known alimentary Acute enteritis (hyperalimentation, the use of rasping food, spices, strong alcoholic drinks, etc.) and allergic (an idiosyncrasy to foodstuff, medicines).

Pathological anatomy. The acute enteritis can be catharal, fibrinous, purulent, ulcerative.

In catharal enteritis, which meets most frequently, the mucous membrane is hyperemic and edematouse covered by serous, sero-mucous or serous-purulent exudation. The inflammatory infiltration involove not only in mucous membrane, but also submucosal a layer.

The dystrophia and a desquamation of an epithelium are seen, especial on apexes of villi (catharal desquamative enteritis).

In fibrinous enteritis, is more often *an ileitis*, the mucosa of an intestine is necrotic and penetrated by fibrinous exudation therefore on a surface of it there are grey or gray-brown membranes. In dependence on depth of a necrosis the inflammation can be *crupouse* or *diphtheric*.

The purulent enteritis is characterized by diffuse infiltration of walls of an intestine by pus (*phlegmonous enteritis*) or formation of pustules, is especial on a place of lymphoid follicles (*apostematous enteritis*).

At *ulcerative enteritis* destructive processes can involve basically group and solitary lymphatic follicles of an intestine, as it is observed in typhoid. Thus the necrosis and ulceration have wide-spread (flu, sepsis) or focal character (an allergic vasculitis, a nodous periarteritis).

Irrespective of character of inflammatory changes of a mucosa at an acute enteritis educe a hyperplasia of the lymphatic tissue of intestine. Sometimes it happens is expressed extremely sharply (for example, a so-called cerebriform swelling of group and solitary follicles at a typhoid) and causes the subsequent destructive changes of an intestinal wall.

Complications of an acute enteritis include a bleeding, perforation of a wall of an intestine with development of a peritonitis (for example, at a typhoid), and also a dehydration and a demineralization (for example, at a cholera). In some cases the acute enteritis can transformate into chronic.

Acute colitis

Acute colitis - an acute inflammation of a colon.

Etiology. Distinguish infections, toxic and toxic -allergic colitis. The contagious colitis includes dysenteric, typroid, colibacillary, staphylococcal, fungoid, protozoal, septic, tubercular, syphilitic colitises, the toxic colitis - uremic, medicamental, and to toxic -allergic - nutritional colitises.

Pathological anatomy. There are following forms of an acute colitis: catharal, fibrinous, purulent, hemorrhagic, necrotic, gangrenous, ulcerative.

In *an endocolitis* the mucosa of an intestine hyperenemic, odematouse, on it

surface are visible clumps of exudation which can have serous, mucous or purulent character (serous, mucous or purulent catarrh). The inflammatory infiltrate penetrates not only thickness of a mucosa, but also submucosa a layer in which hemorrhages are visible. The dystrophia and a necrobiosis of an epithelium are combined with a desquamation of a superficial epithelium and a hypersecretion of Ferri lactases.

Fibrinous colitis in dependence on depth of a necrosis of a mucosa and penetration of fibrinous exudation divide on crupose and diphtheric. *The purulent colitis* is usually characterized by a phlegmonous inflammation - *phlegmonous colitis*, *phlegmon of a colon*. When at a colitis in a wall of an intestine there are plural hemorrhages, speak about *a hemorrhagic colitis*. At *a necrotic colitis* to a necrosis quite often is damage not only a mucosa, but also submucosal layer. *A gangrenous colitis* –is variant of *necrotic colitis*. The acute *ulcerative colitis* is usually outcome of necrotic changes in a wall of an intestine. In some cases, for example at an amebiasis, ulcers in a colon appear in the beginning of illness.

Complications of an acute colitis: a bleeding, perforation and a peritonitis, a paraproctitis with fistulas. In some cases the acute colitis transformate into chronic.

Chronic colitis

The chronic colitis - a chronic inflammation of a colon

Etiology. The factors invoking chronic colitis the same, as in acute, i.e. *contagious*, *toxic* and *toxic -allergic*. The important value have duration of action of these factors

Pathological anatomy.

In *chronic colitis without an atrophy of mucosa* the last is odematouse, dim, grey - red or red, is frequent with plural hemorrhages and erosions. Are marked The desquamation of a prismatic epithelium is marked. The glands are short, the lumen of them is increase, sometimes they remind cysts (*cyst colitis*). Mucosa in which there are hemorrhages, infiltrate by lymphocytes, plasma cells, eosinocytes, quite often cellular infiltrate seen in muscular layer. The degree of a cellular infiltration can be various - from rather moderate focal up to sharply expressed diffuse with formation of separate abscesses in mucosa and the foci of ulceration.

For *a chronic atrophic colitis* are characteristic by decreasing of prismatic epithelium, decrease of number of glands, hyperplasia smoothmuscles elements. In a mucosa the infiltration and growth of connecting tissue are prevail.

Complications. Parosygmoiditis and a paraproctitis, in some cases a hypovitaminosis.

INFLAMMATORY BOWEL DISEASE

(CROHN'S DISEASE AND ULCERATIVE COLITIS)

DEFINITION. The term 'inflammatory bowel disease (IBD)' is commonly used to include 2 idiopathic bowel diseases having many similarities but the conditions usually have distinctive morphological appearance:

1. Crohn's disease or Regional enteritis is an idiopathic chronic ulcerative IBD, characterised by transmural, non-caseating granulomatous inflammation, affecting

most commonly the segment of terminal ileum and/or colon, though any part of the gastrointestinal tract may be involved.

2. Ulcerative colitis is an idiopathic form of acute and chronic ulceroinflammatory colitis affecting chiefly the mucosa and submucosa of the rectum and descending colon, though sometimes it may involve the entire length of large bowel.

Both these disorders primarily affect the bowel but may have systemic involvement in the form of polyarthritis, uveitis, ankylosing spondylitis, skin lesions and hepatic involvement. Both diseases can occur at any age but are more common in 2nd and 3rd decades of life. Females are affected slightly more often.

ETIOPATHOGENESIS. The exact etiology of IBD remains unknown. The following observations, however, point towards multifactorial etiopathogenesis:

1. Genetic factors. Genetic factors are implicated in the etiopathogenesis of IBD is supported by the following evidences:

i) There is about 3 to 20 times higher incidence of occurrence of IBD in first-degree relatives.

ii) There is approximately 50% chance of development of IBD (particularly Crohn's disease) in monozygotic twins.

iii) Genomic search has revealed that disease-associated loci of IBD are present in chromosomes 16, 12, 7, 3 and 1 although there are no consistent genetic abnormalities.

iv) HLA studies show that ulcerative colitis is more common in DR2-related genes while Crohn's disease is more common in DR5 DQ1 alleles.

2. Immunologic factors. Defective immunologic regulation in IBD has been shown to play significant role in the pathogenesis of IBD:

i) *Defective regulation of immune suppression.* In a normal individual, there is lack of immune responsiveness to dietary antigens and commensal flora in the intestinal lumen. In IBD, this immune mechanism of suppression of inflammation is defective and thus results in uncontrolled inflammation.

ii) *Transgenic mouse experimental model studies.* Gene 'knock out' studies on colitis in mice have revealed that multiple immune abnormalities may be responsible for IBD.

iii) *Type of inflammatory cells.* In both types of IBD, activated CD4+ T cells are present in the lamina propria and in the peripheral blood. These cells either activate other inflammatory cells (e.g. macrophages and B cells), or recruit more inflammatory cells by stimulation of homing receptor on leucocytes and vascular endothelium.

3. Microbial factors. There has been some evidence, though not clear-cut, that IBD may have infectious etiology. Though at different times, different microorganisms (bacteria, viruses, protozoa and fungi) have been implicated by different workers, currently attention is focused on the three microbes: 0 *Mycobacterium paratuberculosis* ii) *Measles virus* iii) *Helicobacter hepaticus*.

4. Psychosocial factors. It has been observed that individuals who are unduly sensitive, dependent on others and unable to express themselves, or some major

life events such as illness or death in the family, divorce, interpersonal conflicts etc, suffer from irritable colon or have exacerbation of symptoms.

MORPHOLOGY. The morphologic features of Crohn's disease and ulcerative colitis are sufficiently distinctive so as to be classified separately, the distinguishing features of the two conditions are summarised in Table 18.5.

CROHN'S DISEASE. Crohn's disease may involve any portion of the gastrointestinal tract but affects most commonly 15-25 cm of the terminal ileum which may extend into the caecum and sometimes into the ascending colon:

G/A Characteristic feature is the multiple, well-demarcated segmental bowel involvement with intervening uninvolved 'skip areas'. The wall of the affected bowel segment is thick and hard, resembling a 'hose pipe'. Serosa may be studded with minute granulomas. The lumen of the affected segment is markedly narrowed. The mucosa shows 'serpiginous ulcers', while intervening surviving mucosa is swollen giving 'cobblestone appearance'. There may be deep Assuring into the bowel wall.

M/E The characteristic features are:

1. *Transmural inflammatory cell infiltrate* consisting of chronic inflammatory cells (lymphocytes, plasma cells and macrophages) is the classical microscopic feature.
2. *Non-caseating, sarcoid-like granulomas* are present in all the layers of the affected bowel wall in 60% of cases.
3. There is *spatchy ulceration* of the mucosa which may take the form of deep fissures.
4. There is *widening of the submucosa* due to oedema and foci of lymphoid aggregates.
5. In more *chronic cases*, fibrosis becomes increasingly prominent in all the layers.

Complications of Crohn's disease are: 1. Malabsorption, 2. fistula formation, 3. stricture formation, and 4. development of malignancy.

ULCERATIVE COLITIS. Classically, ulcerative colitis begins in the rectum, and in continuity extends upwards into the sigmoid colon, descending colon, transverse colon, and sometimes may involve the entire colon. The colonic contents may rarely backflow into the terminal ileum in continuity, causing 'back-wash ileitis' in about 10% of cases.

G/A The characteristic feature is the continuous involvement of rectum and colon without any uninvolved skip areas as seen in Crohn's disease. The

	FEATURE	CROHN'S DISEASE	ULCERATIVE COLITIS
A.	MACROSCOPIC FEATURES		
1.	<i>Distribution</i>	Segmental with skip areas	Continuous without skip areas
2.	<i>Location</i>	Commonly terminal ileum and/or ascending colon	Commonly rectum, sigmoid colon and extending upwards
3.	<i>Extent</i>	Usually involves the entire thickness of the affected	Usually superficial, confined to mucosal layers

		segment of bowel wall	
4.	<i>Ulcers</i>	Serpiginous ulcers, may develop into deep fissures	Superficial mucosal ulcers without fissures
5.	<i>Pseudopolyps</i>	Rarely seen	Commonly present
6.	<i>Fibrosis</i>	Common	Rare
7.	<i>Shortening</i>	Due to fibrosis	Due to contraction of muscularis
B. MICROSCOPIC FEATURES			
1.	<i>Depth of inflammation</i>	Typically transmural	Mucosal and submucosal
2.	<i>Type of inflammation</i>	Non-caseating granulomas and infiltrate of mononuclear cells (lymphocytes, plasma cells and macrophages)	Crypt abscess and non-specific acute and chronic inflammatory cells (lymphocytes, plasma cells, neutrophils, eosinophils, mast cells)
3.	<i>Mucosa</i>	Patchy ulceration	Haemorrhagic mucosa with ulceration
4.	<i>Submucosa</i>	Widened due to oedema and lymphoid aggregates	Normal or reduced in width
5.	<i>Muscularis</i>	Infiltrated by inflammatory cells	Usually spared except in cases of toxic megacolon
6.	<i>Fibrosis</i>	Present	Usually absent
C. IMMUNOLOGIC FEATURES			
1.	<i>Lymphocyte type</i>	CD4+ TH1	CD4+ TH2
2.	<i>Cytokines</i>	INF- γ , TNF, IL-12	TGF- β , IL-4, IL-5, IL-13
3.	<i>ANCA-P antibodies</i>	Positive in a few	Positive in most
D. COMPLICATIONS			
1.	<i>Fistula formation</i>	Internal and external fistulae in 10% cases	Extremely rare
2.	<i>Malignant changes</i>	Rare	May occur infrequently in disease of more than 10 years' duration
3.	<i>Type of malignancy</i>	Lymphoma more than carcinoma	Carcinoma more than lymphoma
4.	<i>Fibrous</i>	Common	Never

appearance of colon may vary depending upon the stage and intensity of the disease because of remissions and exacerbations. Mucosa shows linear and superficial ulcers, usually not penetrating the muscular layer. The intervening intact mucosa may form inflammatory 'pseudopolyps.' The muscle layer is thickened due to contraction, producing shortening and narrowing of the affected colon with loss of normal haustral folds giving 'garden-hose appearance'.

M/E Ulcerative colitis because of remission and exacerbations, is characterised by alternating 'active disease process' and 'resolving colitis.' The changes in the 'active disease process' are as under:

1. *Crypt distortion, cryptitis* and focal accumulations of neutrophils forming *crypt abscesses*.
2. *Marked congestion, dilatation and haemorrhages* from mucosal capillaries.
3. *Superficial mucosal ulcerations*, usually not penetrating into the muscle coat, except in severe cases.
4. *Goblet cells* are markedly *diminished*.
5. Areas of *mucosal regeneration and mucodepletion* of lining cells.
6. In long-standing cases, epithelial *cytologic atypia* ranging from mild to marked dysplasia and sometimes developing into carcinoma *in situ*.

Complications of ulcerative colitis are: 1. Toxic megacolon (Fulminant colitis), 2. perianal fistula, 3. carcinoma, and 4. stricture formation.

SMALL INTESTINAL TUMOURS

For obscure reasons, benign as well as malignant tumours of the small bowel are surprisingly rare. Most common *benign tumours*, in descending order of frequency, are: leiomyomas, adenomas and vascular tumours (haemangioma, lymphangioma). Amongst the *malignant tumours*, the most frequently encountered, in descending frequency, are: carcinoid tumours, lymphomas and adenocarcinoma.

Carcinoid Tumour (Argentaffinoma)

Carcinoid tumour or argentaffinoma is a generic term applied to tumours originating from endocrine cells (*synonyms*: argentaffin cells, Kulchitsky cells, enterochromaffin cells) belonging to APUD cell system and are therefore also called as apudomas. The endocrine cells are distributed throughout the mucosa of GI tract. These cells have secretory granules which stain positively with silver salts (argentaffin granules) or many stain after addition of exogenous reducing agent (non-argentaffin or argyrophil granules). Accordingly, carcinoid tumour may be argentaffin or argyrophil type. Depending upon the embryologic derivation of the tissues where the tumour is located, these are classified as foregut, midgut, and hindgut carcinoids.

■ **Midgut carcinoids**, seen in terminal ileum and appendix are the most common (60-80%) and are more often argentaffin positive.

■ **Hindgut carcinoids**, occurring in rectum and colon are more commonly argyrophil type, and comprise about 10-20% of carcinoids.

■ **Foregut carcinoids**, located in the stomach, duodenum and oesophagus are also argyrophil type and are encountered as frequently as in the hindgut (10-20%).

Other uncommon locations are bronchus, trachea, gallbladder, and Meckel's diverticulum.

Appendicitis

Appendicitis results in severe acute or chronic inflammation of the vermiform appendix.

Acute appendicitis

- Acute appendicitis is the most common acute abdominal condition requiring surgery.
- Acute appendicitis is uncommon at the extremes of age and it is most frequently seen in elder children and young adults.
- The most important factor in its pathogenesis is obstruction of the lumen, with the most frequent cause being a fecolith, a molded mass of inspissated fecal material that may develop rock-hard consistency.
- Other causes of obstruction are scars representing a residuum of previous attacks of appendicitis, tumors, external bands, and adhesions, rarely masses of parasites, foreign bodies, and possibly spasm of the muscle at the base of the appendix.
- The immediate cause of acute appendicitis is bacterial infection from the intestinal lumen, though bacterial invasion from the bloodstream in systemic disease is possible.
- The appendix may be involved in diseases primarily affecting other portions of the gastrointestinal tract, such as Crohn's disease, typhoid fever, and amebiasis, and in certain systemic diseases (such as measles).

Clinical-morphological classification of acute appendicitis

1. **Simple appendicitis** is characterized by hyperemia; small hemorrhages and primary affect including small foci leucocytes.
2. **Superficial appendicitis** is characterized by focus of suppurative inflammation in mucosa and edema. Serous membrane is dim.
3. Destructive forms:
 - **Flegmonous appendicitis** occurs the diffuse infiltration of leucocytes in wall of appendix. Gross appearance: appendix is increased, swollen; tense and markedly congested and covered by fibrinous exudate.
 - **Flegmonous-ulcerative appendicitis** is characterized by flegmonous inflammation with necrosis and ulceration in mucosa.
 - **Apostematous appendicitis** the formation of small abscesses occurs. The primary inflammatory lesion may increase in intensity and lead to a small abscess in the wall, and this may perforate.
 - **Gangrenous appendicitis** occurs large areas of necrosis, the immediate antecedent of rupture and may has two causes:
 - a) Thrombosis and thromboembolism of mesentery artery (primary gangrene of appendix) due to obstruction of the lumen by fecoliths.

- b) Thrombosis due to development of periappendicitis (secondary gangrenous appendicitis).

The complications of acute appendicitis

1. Necrosis of appendix wall (gangrenous appendicitis), leading to perforation, with subsequent generalized peritonitis.
2. Involvement of adjacent bowel loops, causing perforation of small bowel.
3. The omentum may become adherent, localizing the peritonitis to the right iliac fossa. Fibrosis and continued inflammation cause development of a mass in the right iliac fossa. This may resolve with scarring, may form an abscess that drains to the surface, or may rupture, with development of generalized peritonitis.
4. Empyema of appendix due to obstruction of proximal parts.
5. Spread of infection by portal vein branches may propagate to the liver; this was formerly an important cause of portal pyemic abscesses in the liver.

Chronic appendicitis

Chronic appendicitis is characterized by sclerosis and atrophy, lipomatosis and diffuse infiltration by lymphocytes and histiocytes.

- Obliteration of part or all of the appendiceal lumen by a mixture of fibrous tissue, lymphocytes, lymphoid follicles, and nerve bundles is common.
- In the fibrosis causes complete of the lumen, continued mucous secretion might result in cystic dilatation – *mucocele*.
- Such a cyst may rupture, giving rise to myxoma peritonei: the mucus-secreting epithelium is spilled into the peritoneal cavity and loculations of mucin and adhesions result.

Surgically removed appendix may be histologically normal (false-positive clinical diagnosis). If the appendix is normal, but clinical symptoms took place is called "*false appendicitis*". It may be due to mimicking acute appendicitis some diseases: salpingitis, ectopic pregnancy, Meckel's diverticulitis, peptic ulcer, and pain cause by trivial pelvic bleeding at the time ovulation.

MALIGNANT COLORECTAL TUMOURS

A. Colorectal Carcinoma

Colorectal cancer comprises 98% of all malignant tumours of the large intestine. It is the commonest form of visceral cancer, next only to lung cancer in the United States. The incidence of carcinoma of the large intestine rises with age; average age of patients is about 60 years.

ETIOLOGY. A few etiological factors have been implicated:

1. **Geographic variations.** The incidence of large bowel carcinoma shows wide variation throughout the world. Colorectal cancer is generally thought to be a disease of affluent societies because its incidence is directly correlated with the

socioeconomic status of the countries. In Japan, however, colon cancer is much less common than in the US but the incidence of rectal cancer is similar.

2. Dietary factors. The following factors are implicated.

i) A low intake of vegetable fibre-diet leading to low stool bulk is associated with higher risk of colorectal cancer.

ii) Consumption of large amounts of fatty foods by populations results in excessive cholesterol and their metabolites which may be carcinogenic, iii) Excessive consumption of refined carbohydrates that remain in contact with the colonic mucosa for prolonged duration changes the bacterial flora of the bowel.

3. Adenoma-carcinoma sequence. There is strong evidence to suggest that colonic adenocarcinoma arises from pre-existing adenomas, referred to as adenoma-carcinoma sequence. The following evidences are cited to support this hypothesis:

i) In a case with early invasive cancer, the surrounding tissue often shows *preceding changes* of evolution from adenoma -> hyperplasia -> dysplasia -> carcinoma *in situ*->invasive carcinoma.

ii) *Incidence* of adenomas in a population is directly proportionate to the prevalence of colorectal cancer.

iii) The risk of adenocarcinoma colon declines with *endoscopic removal* of all identified adenomas.

iv) The peak incidence of adenomas generally *precedes* by some years to a few decades the peak incidence for colorectal cancer.

v) The risk of malignancy increases with the following *adenoma-related factors*:

a) *Number of adenomas*: familial polyposis syndromes almost certainly evolve into malignancy.

b) *Size of adenomas*: large size increases the risk.

c) *Type of adenomas*: greater villous component associated with higher prevalence.

4. Other diseases. Presence of certain pre-existing diseases such as inflammatory bowel disease (especially ulcerative colitis) and diverticular disease for long duration increases the risk of developing colorectal cancer subsequently.

GENETIC BASIS OF COLORECTAL CARCINOGENESIS. Studies by molecular genetics have revealed that there are sequential multistep mutations in evolution of colorectal cancer from adenomas by one of the following two mechanisms:

1. APC mutation p-catenin mechanism. This pathway of multiple mutations is generally associated with morphologically identifiable changes as described above in adenoma-carcinoma sequence. These changes are as under:

i) Loss of tumour suppressor APC (adenomatous polyposis coli) gene, ii) Point mutation in K-RAS gene, iii) Deletion of DCC gene, iv) Loss of TP53 tumour suppressor gene.

2. Microsatellite instability mechanism. In this pathway also, there are multiple mutations but of different genes, and unlike APC mutation-catenin mechanism there are no morphologically identifiable changes. Basic mutation is loss of DNA repair gene. This results in a situation in which repetitive DNA sequences (i.e.

microsatellites) become unstable during replication cycle, termed microsatellite instability, which is the hallmark of this pathway. The significant DNA repair genes which are mutated in colon cancer are as under:

i) TGF- β receptor gene, ii) BAX gene.

LOCATION. *Distribution* of the primary colorectal cancer reveals that about 60% of the cases occur in the rectum, followed in descending order, by sigmoid and descending colon (25%), caecum and ileocaecal valve (10%); ascending colon, hepatic and splenic flexures (5%); and quite uncommonly in the transverse colon.

G/A There are distinct differences between the growth on the right and left half of the colon:

■ The **right-sided growths** tend to be large, cauliflower-like, soft and friable masses projecting into the lumen (*fungating polypoid carcinoma*).

■ **Growths in the left colon**, on the other hand, have napkin-ring configuration i.e. they encircle the bowel wall circumferentially with increased fibrous tissue forming annular ring, and have central ulceration on the surface with slightly elevated margins (*carcinomatous ulcers*).

M/E The appearance of right and left-sided growths is similar. About 95% of colorectal carcinomas are adenocarcinomas of varying grades of differentiation, out of which approximately 10% are mucin-secreting colloid carcinomas. The remaining 5% tumours include uncommon microscopic patterns like undifferentiated carcinoma, signet-ring cell carcinoma, and adeno-squamous carcinomas seen in more distal colon near the anus. The histologic grades indicating the degree of differentiation are: well-differentiated, moderately-differentiated and poorly-differentiated.

SPREAD. The tumour may spread by following routes:

1. **Direct spread.** The tumour spreads most commonly by direct extension in both ways- *circumferentially* into the bowel wall as well as *directly* into the depth of the bowel wall to the serosa, pericolic fat, and sometimes into peritoneal cavity.

2. **Lymphatic spread.** Spread via lymphatics occurs rather commonly and involves, firstly the regional lymph nodes in the vicinity of the tumour, and then into other groups of lymph nodes like preaortic, internal iliac and the sacral lymph nodes.

3. **Haematogenous spread.** Blood spread of large bowel cancer occurs relatively late and involves the liver, lungs, brain, bones and ovary.

CLINICAL FEATURES, i) Occult bleeding (melaena). ii) Change in bowel habits, more often in left-sided growth. .iii) Loss of weight (cachexia), iv) Loss of appetite (anorexia), v) Anaemia, weakness, malaise.

The most common *complications* are obstruction and haemorrhage; less often perforation and secondary infection may occur. Aside from the diagnostic methods like stool test for occult blood, PR examination, proctoscopy, radiographic contrast studies and CT scan, recently the role of tumour-markers has been emphasised. Of particular importance is the estimation of carcinoembryonic antigen (CEA) level which is elevated in 100% cases of metastatic colorectal cancers, while it is positive in 20-40% of early lesions, and 60-70% of advanced primary lesions.

The **prognosis** of colorectal cancer depends upon a few variables: i) Extent of the bowel involvement, ii) Presence or absence of metastases, iii) Histologic grade of the tumour, iv) Location of the tumour.

The most important prognostic factor in colorectal cancer is, however, the stage of the disease at the time of diagnosis. Three staging systems are in use:

1. *Dukes' ABC staging* (modified Duke's includes stage D as well).
2. *Astler-Coller staging* which is a further modification of Duke's staging and is most widely used.
3. *TNM staging* described by American Joint committee is also used.

IV. TUMOURS OF THE ANAL CANAL

Amongst the *benign tumours* of the anal canal, multiple viral warts called as condyloma acuminata are the only tumours of note. *Malignant tumours* of the anal canal include: 1. Squamous cell carcinoma. 2. Basaloid carcinoma. 3. Mucoepidermoid carcinoma. 4. Adenocarcinoma (rectal, of anal glands, within anorectal fistulas) 5. Undifferentiated carcinoma. 6. Malignant melanoma.

Pancreatitis

Pancreatitis is inflammation of the pancreas with acinic cell injury. It is classified into acute and chronic forms both of which are two distinct entities.

Acute pancreatitis

- Acute pancreatitis is an acute inflammation of the pancreas.
- The severe form of the disease associated with macroscopic hemorrhages and fat necrosis in and around the pancreas is termed acute hemorrhage pancreatitis or acute pancreatic necrosis.
- The condition occurs in adults between the age of 40 and 70 years and is commoner in females than in males.
- The onset of acute pancreatitis is sudden, occurring after a bout of alcohol or a heavy meal. The patient presents with abdominal pain, vomiting and collapse and the condition must be differentiated from other diseases producing acute abdomen such as acute appendicitis, perforated peptic ulcer, and acute cholecystitis.
- *Etiology.* The two leading causes associated with acute pancreatitis are alcoholism and cholelithiasis, both of which are implicated in more than 80% of cases. Less common causes of acute pancreatitis include trauma, ischemia, shock, extension of inflammation from the adjacent tissues, blood-borne bacterial infection, viral infections, certain drugs, etc.

Morphology

- The morphology of acute pancreatic necrosis stems directly from the action of activated pancreatic enzymes that are released into the pancreatic substance.

- The basic alterations are proteolytic destruction of pancreatic substance, necrosis of blood vessels with subsequent hemorrhage, necrosis of fat, and an accompanying inflammatory reaction.
- Amorphous basophilic calcium precipitates may be visible within the necrotic focus.
- Grossly, foci of pancreatic necrosis are blue-black hemorrhages and grey-white necrotic softening alternates with sprinkled foci of yellow-white, chalky fat necrosis.

Complications

A patient of acute pancreatitis who survives may develop a variety of systemic and local complications:

1. Systemic complications are chemical and bacterial peritonitis, endotoxic shock, and acute renal failure.
2. Local complications are pancreatic abscess, pancreatic pseudocyst, and duodenal obstruction.

Chronic pancreatitis

Chronic pancreatitis is the progressive destruction of the pancreas due to repeated mild and subclinical attack of acute pancreatitis.

- Most patients present with recurrent attacks of severe abdominal pain at intervals of months to years.
- Weight loss and jaundice are often associated. Later manifestations include associated diabetes mellitus and steatorrhea.
- ***Etiology.*** Most cases of chronic pancreatitis are caused by the same factors as for acute pancreatitis.

Morphology

- Chronic pancreatitis is distinguished by irregularly distributed fibrosis, reduced number and size of acini with relative sparing of the islets of Langerhans, and variable obstruction of pancreatic ducts of all sizes.
- The lesions have a macroscopic lobular distribution and may involve portions or the entire pancreas.
- A chronic inflammatory infiltrate around lobules and ducts is usually present.
- The ductal epithelium may be atrophied or hyperplastic or may show squamous metaplasia.
- Macroscopically, the gland is hard and exhibits foci of calcification and may developed pancreatic calculi. These concretions vary from calculi invisible to the naked eye, to stones 1 cm to several centimetres in diameter, giving rise to the term “***chronic calcifying pancreatitis***”.

- With chronic ductal obstruction, the distribution of lesions is irregular, and the ductal epithelium generally is less severely damaged. Protein plugs and calcified stones are rare.

Complications

Last stage of chronic pancreatitis may be complicated by diabetes mellitus, pancreatic insufficiency with steatorrhea and malabsorption and formation of pancreatic pseudocysts.

PANCREATIC PSEUDOCYST

Pancreatic pseudocyst is a localised collection of pancreatic juice, necrotic debris and haemorrhages. It develops following either acute pancreatitis or trauma.

G/A The pseudocyst may be present within or adjacent to the pancreas.

Usually it is solitary, unilocular, measuring up to 10 cm in diameter with thin or thick wall.

M/E The cyst wall is composed of dense fibrous tissue with marked inflammatory reaction. There is evidence of preceding haemorrhage and necrosis in the form of deposits of haemosiderin pigment, calcium and cholesterol crystals.

CARCINOMA OF PANCREAS

Pancreatic cancer is the term used for cancer of the exocrine pancreas. It is one of the common cancers, particularly in the Western countries and Japan. In the United States, cancer of the pancreas is the second most common cancer of the alimentary tract after colorectal cancer, and accounts for 5% of all cancer deaths in that country. It is commoner in males than in females and the incidence increases progressively after the age of 50 years.

ETIOLOGY. Following factors have been implicated in its etiology. 1. Smoking 2. Diet and obesity 3. Chemical carcinogens 4. Diabetes mellitus 5. Chronic pancreatitis.

However, excessive consumption of alcohol or coffee, and cholelithiasis are not risk factors for pancreatic cancer. A mutation in *RAS* gene has been found in more than 85% cases of cancer of the pancreas.

The most common location of pancreatic cancer is the head of pancreas (70%), followed in decreasing frequency, by the body and the tail of pancreas.

G/A Carcinoma of the head of pancreas is generally small, homogeneous, poorly-defined, grey-white mass without any sharp demarcation between the tumour and the surrounding pancreatic parenchyma. The tumour of the head extends into the ampulla of Vater, common bile duct and duodenum, producing obstructive biliary symptoms and jaundice early in the course of illness.

M/E Most pancreatic carcinomas arise from the ductal epithelium which normally comprises less than 4% of total pancreatic cells, whereas carcinoma of the acini constitutes less than 1% of pancreatic cancers. The following histologic patterns of pancreatic carcinoma are seen: 1. Well-differentiated adenocarcinoma 2. Adenoacanthoma 3. Rarely, peculiar tumour giant cell formation 4. Acinar cell carcinoma.

CLINICAL FEATURES. Generally, the following features are present: 1. Obstructive jaundice. 2. Other features.

The prognosis of pancreatic cancer is dismal: median survival is 6 months from the time of diagnosis.