جامعة الملك سعود
King Saud University

08 09

Any future corrections will be in the editing file , click

GNT pathology cases file
Don't forget to check it frequently Click

Pathology

Colonic tumors and polyps

439

Color index
- Important
- Doctor's note
- Extra info
- Main text
- ★ Male's slide
- ★ Female's slide

اللهم لا سهل الا ماجعلته سهلا و انت
تجعل الحزن إذا شئت سهلا

Revised & Approved
Bassam Alasmari
Rania Almutiri

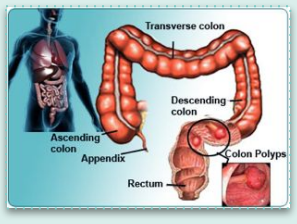
Objective

1. Know the classification of intestinal tumors (small intestine and colon)
2. Know the definition of a polyp.
3. Compare adenomatous/neoplastic polyps and non neoplastic polyps (hyperplastic polyps, inflammatory polyp and hamartomatous polyp) with respect to pathology (gross and microscopic features).
4. Know the three subtypes of adenomatous polyps, eg, tubular adenoma, villous adenoma, tubulovillous adenoma.
5. Describe the adenomatous polyp-cancer sequence and the features associated with risk of malignancy, eg, polyp size, histologic architecture, and severity of epithelial dysplasia.
6. Describe the classification of the hereditary syndromes involving the GI tract and the syndromes associated with an increased risk of cancer (Peutz-Jeghers syndrome, familial adenomatous polyposis, and hereditary nonpolyposis colorectal carcinoma)

Overview

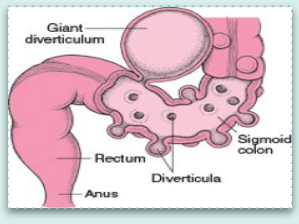
Tumors of the small and large intestines

- Polyps
- Carcinoma
- Carcinoid tumor
- Lymphoma



Sigmoid colon

Most common site GI polyps, diverticula (outpouching/herniation of mucous into the bowel wall) and cancer



Polyps

- **Non-neoplastic polyps (90%)**
  - Hyperplastic polyps
  - Hamartomatous polyps
  - Inflammatory polyps
  - Lymphoid polyps
- **Neoplastic polyps (10%)**
  - Adenoma

Non-neoplastic polyps

Hyperplastic polyps (Increased number of cells)

- Asymptomatic, more than 50% are located in the rectosigmoid
- Most common type in adults
- Sawtooth (أسنان المنشار) surface & Star shaped crypts
- Composed of well-formed glands and crypts lined by differentiated goblet or absorptive cells.
- **No malignant potential** or polyposis syndromes, and No dysplasia.

Hamartomatous polyps (Normal tissue but in disorganized matter)

1) Juvenile polyps

No tendency to cancer progression, only pain & sometimes bleeding

Juvenile Polyps (retention polyp)

- Developmental malformations affecting the glands and lamina propria
- Commonly occur in children under 5 years old in the rectum.
- In adult called retention polyp.
- No malignant potential
- Smooth eroded surface with numerous mucus retention cysts, typical of sporadic juvenile polyps.

Juvenile polyposis

Autosomal dominant:

- TGF-β signaling pathway abnormalities
- Juvenile polyps; risk of gastric, small intestinal, colonic, and pancreatic adenocarcinoma

Cowden syndrome:

- Abnormality in PTEN
- Hamartomatous polyps, lipomas, ganglioneuromas, inflammatory polyps; increased risk for colon cancer and cancer of thyroid and breast

Cronkhite-Canada syndrome:

- **Non-Hereditary** polyposis syndrome
- Polyps plus **ectodermal abnormalities** (Nail atrophy, hair loss, abnormal skin pigmentation) cachexia (weight loss), and anemia

2) Peutz-Jeghers syndrome

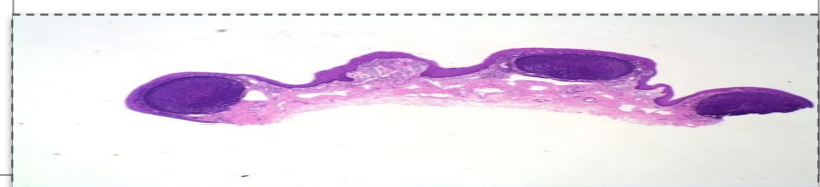
- Rare, autosomal dominant
- hamartomatous polyps accompanied by mucosal and **cutaneous pigmentation** around the lips, oral mucosa, face and genitalia, present with red blood in stool.
- Polyps tend to be large and pedunculated (bleeding).
- **Increased risk of developing carcinoma** of the pancreas, breast, lung, ovary and uterus.
- **Mean age** at presentation (10-15 years old)
- **GI lesions:** Arborizing polyps (Small intestine > Colon > Stomach; Colonic adenocarcinoma)
- **Selected extragastrointestinal manifestations:** Mucocutaneous pigmentation; increased risk for thyroid, breast, lung, pancreas, gonadal, and bladder cancers.
- **LKB1/STK11** encodes a tumor suppressive protein kinase that regulates cellular metabolism

Inflammatory polyps

- longstanding IBD, especially in chronic ulcerative colitis.
- Represent an exuberant reparative response to longstanding mucosal injury called **pseudopolyps**.

Lymphoid polyps

Collection of lymphoid tissue in the lamina propria . Common in children . It can be physiological & forms lymphoid-follicle like masses in the lamina propria .



Polyps

- Non-neoplastic polyps (90%)
  - Hyperplastic polyps
  - Hamartomatous polyps
  - Inflammatory polyps
  - Lymphoid polyps
- Neoplastic polyps (10%)
  - **Adenoma**

Neoplastic polyps

If the polyp is single

Adenomatous Polyp (adenoma)

- Occur mainly in large bowel
- Sporadic (Acquired, few) and familial (>100 polyps)
- Vary from small pedunculated (مثل العنق) to large sessile.
- Epithelium proliferation and **dysplasia**
- Divided into three types (Depending on surface/villous architecture) :

1)Tubular adenoma

- Most common
- less than 25% villous architecture (smooth surface)
- Represents 75% of all neoplastic polyps.
- 75 % occur in the distal colon and rectum.
- Sigmoid colon most common site.
- Lining epithelium is dysplastic.

2) Villous adenoma

- villous architecture over 50%
- The least common, largest and most ominous of epithelial polyps (most likely to **undergo malignant transformation**).
- Age: 60 to 65 years, 75% located in rectosigmoid area
- Present with rectal bleeding or anemia, large ones may **secrete** copious amounts of **mucoid material rich in protein and potassium** which will result in :
- Large tumors can produce **hypoalbuminemia** and **hypokalemia** (causes secretory diarrhea) .

3) Tubulovillous adenoma

-villous architecture between 25 and 50%.

- 20%–30% of polyps
- Intermediate in size, degree of dysplasia and malignant potential between tubular and villous adenomas.

Multiple neoplastic polyps

Familial Polyposis Syndrome (FAP)

Patients have genetic tendencies to develop neoplastic polyps.

★Mutated Gene: APC ★GI lesion: Multiple Adenomas.

- **Divided into three types:**

□Familial polyposis coli (FPC)

- Genetic defect of Adenomatous polyposis coli (APC).
- **APC** gene located on the long arm of chromosome 5 (5q21).
- APC gene is a tumor suppressor gene
- Innumerable neoplastic polyps in the colon (500 to 2500)
- Polyps are also found elsewhere in alimentary tract
- The risk of colorectal cancer is 100% by midlife
- Treatment : colectomy “due to risk of colorectal cancer developing “
- Classic FAP : 10-15 years old (congenital RPE hypertrophy)
- Attenuated FAP : 40-50 years old .

Gardener’s syndrome

★**Mean age at presentation**: 10-15 years old

- **Selected extragastrointestinal manifestations:** Polyposis coli, Multiple **osteomas**, Desmoids (tumor like fibroma in the soft tissues) , Skin (Epidermal) cysts, Fibromatosis.

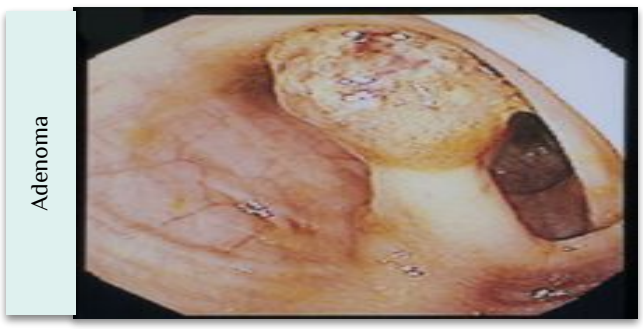
□Turcot syndrome

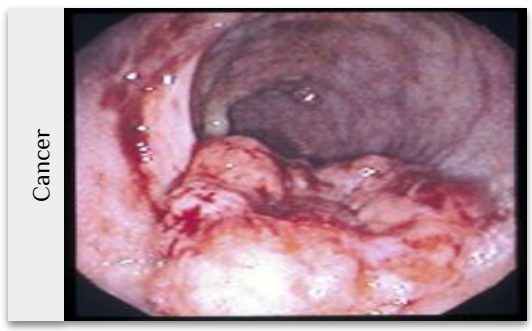
★**Mean age at presentation**: 10-15 years old

- **Selected extragastrointestinal manifestations:** Polyposis coli, CNS tumors, Medulloblastoma, Glioma, Fibromatosis.

Relationship of Neoplastic Polyps to Carcinoma

Adenoma to carcinoma sequence is documented by several genetic alterations and morphological appearance..





Normal Epithelium → Hyper- proliferation → Early Adenoma → Intermediate Adenoma → Late Adenoma → Cancer

★ APC loss

★ K-ras Mutation

★ Chrom 18 loss

★ p53 loss

The probability of carcinoma occurring in a neoplastic polyp is related to:

1. The size of the polyp.
2. The relative proportion of its villous features.
3. The presence of significant cytologic atypia (dysplasia) in the neoplastic cells.
4. Multiple polyps ★

Summary

	Hyperplastic p	- Asymptomatic, rectosigmoid, No malignant potential or polyposis syndromes. - Sawtooth surface & Star shaped crypts. composed of well-formed glands and crypts lined by differentiated goblet or absorptive cells.
Non-neoplastic polyps	**Hamartomatous**	1/ Juvenile Polyps: - Affecting the glands and lamina propria, No malignant potential. - In adult called retention polyp. - Smooth eroded surface with numerous mucus retention cysts, typical of sporadic juvenile polyps. 2/ Juvenile polyposis 3/ Peutz-Jehgers syndrome: - hamartomatous polyps accompanied by mucosal and cutaneous pigmentation around the lips, oral mucosa, face and genitalia, present with red blood in stool. - Polyps tend to be large and pedunculated. - Increased risk of developing carcinoma of the pancreas, breast, lung, ovary and uterus.
	Inflammatory p	- longstanding IBD (chronic ulcerative colitis), have Pseudopolyps.
	Lymphoid p	-
Neoplastic polyps	**Adenomatous**	- In large bowel, small pedunculated to large sessile. - Epithelium proliferation and dysplasia 1/ Tubular adenoma: less than 25% villous architecture in the distal colon and rectum. 2/ Villous adenoma: villous architecture over 50% in rectosigmoid area - Present with rectal bleeding or anemia, secrete copious amounts of mucoid material rich in protein and potassium (hypoalbuminemia and hypokalemia). 3/ Tubulovillous adenoma: villous architecture between 25 and 50%, Intermediate in size, degree of dysplasia and malignant potential between tubular and villous adenomas.
	Familial Polyposis Syndrome (FAP)	1/ Familial polyposis coli: Genetic defect of Adenomatous polyposis coli (APC) on chromosome 5 (5q21). 2/ Gardener's syndrome: Polyposis coli, Multiple osteomas, Desmoids, Skin (Epidermal) cysts, Fibromatosis. 3/ Turcot syndrome: Polyposis coli, CNS tumors, Medulloblastoma, Glioma, Fibromatosis.

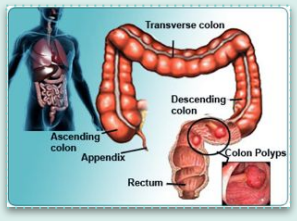
Objective

1. Describe the epidemiology of colon cancer.
2. Compare the pathology (gross and microscopic features) and clinical features of right-sided colonic adenocarcinoma and left-sided colorectal adenocarcinoma.
3. Describe the relationship between prognosis and the various stages of cancer of the colon and rectum as noted in the TNM (tumor-nodes-metastasis) classification and staging system.
4. Describe the relationship between carcinoembryonic antigen (CEA) and recurrence following resection of the primary tumor.
5. Mention the significant of carcinoid tumor and its features

Overview

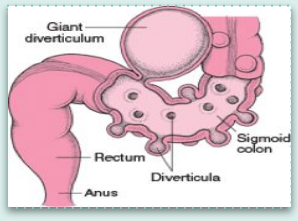
Tumors of the small and large intestines

- Polyps
- Carcinoma
- Carcinoid tumor
- Lymphoma



Sigmoid colon

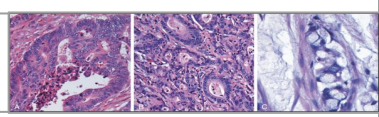
Most common site GI polyps, diverticula and cancer



Adenocarcinoma

- Adenocarcinoma of the colon is the most common malignancy of the GI tract and is a major cause of morbidity and mortality worldwide.

- Constitutes 98% of all cancers in the large intestine. ★Incidence peaks at 60 to 70 years of age

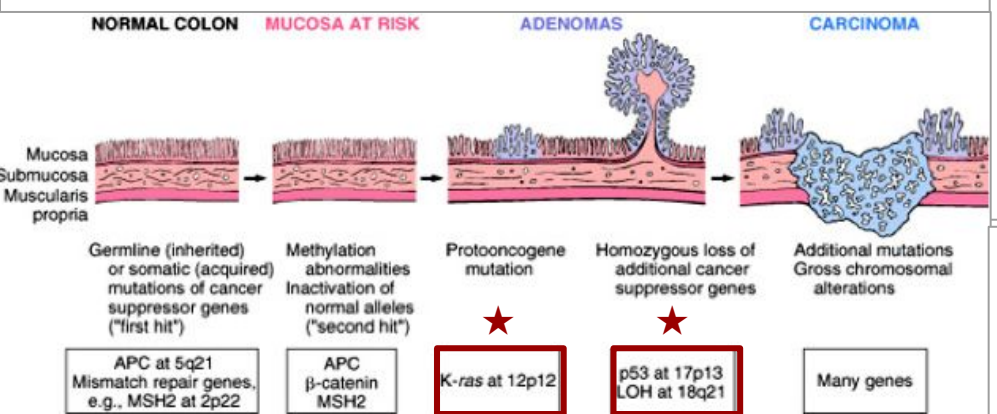
Predisposing factors	1. IBD (ulcerative colitis) , adenomas (more villous) , polyposis syndrome.
	2. Diet appears to play an important role in the risk for colon cancer: - Alcohol - Reduced intake of vit A, C & E. - Low fibre diet. - High fat content (Such as Fast food). why? ★ The reason: It is theorized that reduced fiber content leads to **decreased stool bulk** and altered composition of the intestinal microbiota. This change may increase synthesis of potentially toxic oxidative by-products of bacterial metabolism, which would be expected to remain in contact with the colonic mucosa for longer periods of time as a result of reduced stool bulk. High fat intake also enhances hepatic synthesis of cholesterol and bile acids, which can be converted into carcinogens by intestinal bacteria.
★ **Prevention**	Several epidemiologic studies suggest that aspirin or other NSAIDs have a protective effect. This is consistent with studies showing that some NSAIDs cause polyp regression in FAP patients in whom the rectum was left in place after colectomy.
Morphology	70% are in the rectum, rectosigmoid and sigmoid colon.
	Left-sided carcinomas tend to be annular, encircling lesions with early symptoms of obstruction / Right-sided carcinomas tend to grow as polypoid, fungating masses, obstruction is uncommon (bleeding & iron deficiency anaemia)
	★ Mucinous adenocarcinoma secret abundant **mucin** that may dissect through cleavage planes in the wall. 
Signs and symptoms	If located closer to the anus: change in bowel habit, feeling of incomplete defecation, PR bleeding
	A tumor that is large enough to fill the entire lumen of the bowel may cause bowel obstruction
	★ Right-sided lesions are more likely to bleed while left-sided tumors are usually detected later and could present with bowel obstruction.
colorectal carcinoma	★ Serum levels of carcinoembryonic antigen (CEA) - A tumor marker , oncofetal protein - are related to tumor size and extent of spread. They are helpful in **monitoring** for recurrence of tumor after resection not used in **diagnosis** .

Carcinogenesis

Two pathogenetically distinct pathways for the development of colon cancer, both seem to result from accumulation of multiple mutations:

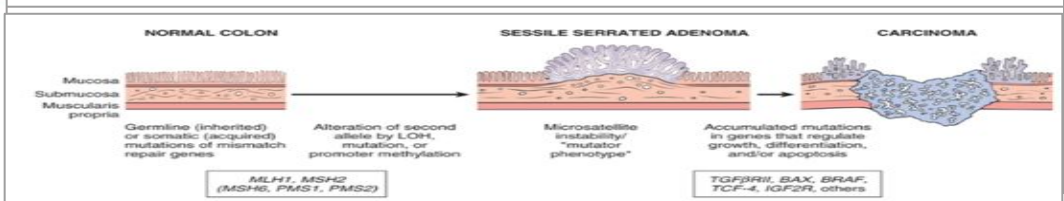
1)The APC/B-catenin pathway (85 %)

- Chromosomal instability that results in stepwise accumulation of mutations in a series of oncogenes and tumor suppressor genes.
- **Familial Adenomatous Polyposis**: Hereditary mutation of the **APC gene** is the cause of familial adenomatous polyposis (FAP), where affected individuals carry an almost 100% risk of developing colon cancer by age 40 years.



2) The DNA mismatch repair genes pathway

- These are referred to as MSI high, or MSI-H, tumors: 10%-15% of sporadic cases.
- There is accumulation of mutations, Five DNA mismatch repair genes **(MSH2, MSH6, MLH1, PMS1, AND PMS2)**
- give rise to the hereditary non polyposis colon carcinoma (HNPCC) syndrome.
- ★ This result in microsatellite instability and permit accumulation of mutations in numerous genes.
- ★ If these mutations affect genes involved in cell survival and proliferation, cancer may develop.
- ★ It progress from normal to sessile **serrated** adenomas to adenocarcinoma
- ★ May produce abundant mucin that accumulates within the intestinal wall, and these carry a poor prognosis



TNM Staging of Colon Cancers is used for staging

In female slides only

Girls' dr: It's just for your knowledge in the clinical practice ما أعتقد يجيبونها بالامتحان

Tumor-Node-Metastasis (TNM) classification of colorectal carcinoma

Tumor	
Tis	carcinoma in situ, intramucosal carcinoma
T1	tumor invades submucosa
T2	tumor invades into but not through muscularis propria
T3	tumor invades through the muscularis propria
T4	tumor invades adjacent organs or visceral peritoneum
Regional lymph nodes	
NX	regional lymph nodes cannot be assessed
N0	no regional lymph node metastasis
N1	metastasis in 1 - 3 regional lymph nodes
N2	metastasis in 4 or more regional lymph nodes
Distant metastasis	
MX	Distant metastasis cannot be assessed
M0	no distant metastasis
M1	Distant metastasis or seeding of abdominal organs

Colorectal staging and survival

Stage	Tumor-Node-Metastasis (TNM) criteria			5-Year survival (%)
	T	N	M	
I	T1, T2	N0	M0	74
II				
IIA	T3	N0	M0	67
IIB	T4	N0	M0	59
III				
IIIA	T1, T2	N1	M0	73
IIIB	T3, T4	N1	M0	46
IIIC	Any T	N2	M0	28
IV	Any T	Any N	M1	6

The most important prognostic factors are depth of invasion and the presence or absence of lymph node metastases and distant metastasis.

Carcinoid Tumors

- Neoplasms arising from endocrine cells found along the length of GIT mucosa.

★The peak incidence: sixth decade, but they may appear at any age.

★They compose less than 2% of colorectal malignancies

- **Almost half of small intestinal malignant tumors:**

- 60 to 80% appendix and terminal ileum - 10 to 20% rectum.

★ Behavior	Aggressive behavior correlates with: 1. Site of origin: Appendiceal and rectal carcinoids infrequently metastasize, even though they may show extensive local spread 90% of ileal, gastric, and colonic carcinoids that have penetrated halfway through the muscle wall have spread to lymph nodes and distant sites at the time of diagnosis, especially those larger than 2 cm in diameter. 2. Depth of local penetration 3. Size of the tumor
Morphology	★Grossly : A solid, yellow-tan appearance ★Microscopically: The cells are **monotonously** similar, having a scant, pink granular cytoplasm and a round-to-oval stippled nucleus. - Ultrastructural features (By electron microscope): neurosecretory electron dense bodies in the cytoplasm
Clinical features	- Asymptomatic - May cause obstruction, intussusception or bleeding. - May elaborate hormones (على حسب الهرمون اللي يُفرز): Zollinger-Ellison (secretes gastrin), Cushing's carcinoid or other syndromes.

Carcinoid syndrome

- 1% of carcinoid tumor & in 20% of those of widespread metastasis

- Paroxysmal flushing, episodes of asthma-like wheezing, right-sided heart failure, attacks of watery diarrhea, abdominal pain

- The principal chemical mediator is **serotonin**

- The syndrome is classically associated with ileal carcinoids with hepatic metastases, Why ? In carcinoid tumor with normal liver: the abnormal serotonin is secreted into portal circulation and then detoxified in the liver. But if there's liver metastasis, serotonin is secreted directly into the systemic circulation leading to these symptoms ,

★ Clinical findings ★	- Due to serotonin and other bioactive compounds (e.g., histamine, bradykinin) - Flushing of the skin (75%–90% of cases) Due to vasodilation; may be triggered by emotion, alcohol, other foods - **Motility related Diarrhea** (>70% of cases), due to increased bowel motility from serotonin - Intermittent wheezing and dyspnea (25% of cases), due to bronchospasm - Facial telangiectasia - Tricuspid regurgitation and pulmonary stenosis, Because serotonin increases collagen production in the valves (right sided)
Serotonin and diarrhea	Patients with carcinoid syndrome often suffer from diarrhea, which has both a secretory and a motor component (secretory & motility related diarrhea). The secretory component of carcinoid diarrhea is attributable to excessive serotonergic stimulation of submucosal secretomotor neurons; the motor component includes faster small bowel and colon transit and an exaggerated tonic response of the colon to ingestion of a meal

Lymphoma

- Most often low-grade lymphomas arising in mucosal-associated lymphoid tissue (MALT) lymphoma or high-grade non-Hodgkin's lymphomas of B cell type.

- May occur in any part of the intestine;

- The ileocecal region is a favored site for Burkitt's lymphoma with right iliac fossa mass especially in children .

Tumors marker

❖ male's dr : tumor markers are not specific and can elevated in others diseases so if we have patients with high CEA we should do endoscopy

A tumor marker is a substance found in the blood , urine or body tissues that can be elevated in cancer, among other tissue types

Carcinoembryonic antigen (CEA)

Carbohydrate antigen (CA19-9)

Useful to assess disease recurrence (late stage)

❖ male's dr : for your knowledge

CEA levels may also be raised in some non-neoplastic conditions like ulcerative colitis pancreatitis, cirrhosis COPD, Crohn's disease as well as in smokers

CA19-9 are raised in in patients with colon cancer and pancreatic cancer, esophageal cancer and hepatocellular carcinoma. Apart from cancer, elevated levels may also occur in pancreatitis, cirrhosis

Tissue inhibitor of metalloproteinases 1 (TIMP1)

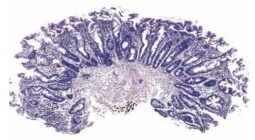
Early as well as late stage disease

Non-neoplastic polyps	Hyperplastic p	- Asymptomatic, rectosigmoid, No malignant potential or polyposis syndromes. - Sawtooth surface & Star shaped crypts. composed of well-formed glands and crypts lined by differentiated goblet or absorptive cells.
	Hamartomatous	**1/ Juvenile Polyps:** - Affecting the glands and lamina propria, No malignant potential. - In adult called retention polyp. - Smooth eroded surface with numerous mucus retention cysts, typical of sporadic juvenile polyps. **2/ Juvenile polyposis** **3/ Peutz-Jehgers syndrome:** - hamartomatous polyps accompanied by mucosal and cutaneous pigmentation around the lips, oral mucosa, face and genitalia, present with red blood in stool. - Polyps tend to be large and pedunculated. - Increased risk of developing carcinoma of the pancreas, breast, lung, ovary and uterus.
	Inflammatory p	- longstanding IBD (chronic ulcerative colitis), have Pseudopolyps.
	Lymphoid p	-
Neoplastic polyps	Adenomatous	- In large bowel, small pedunculated to large sessile. - Epithelium proliferation and dysplasia 1/ **Tubular adenoma:** less than 25% villous architecture in the distal colon and rectum. 2/ **Villous adenoma:** villous architecture over 50% in rectosigmoid area - Present with rectal bleeding or anemia, secrete copious amounts of mucoid material rich in protein and potassium (hypoalbuminemia and hypokalemia). 3/ **Tubulovillous adenoma:** villous architecture between 25 and 50%, Intermediate in size, degree of dysplasia and malignant potential between tubular and villous adenomas.
	Familial Polyposis Syndrome (FAP)	1/ **Familial polyposis coli:** Genetic defect of Adenomatous polyposis coli (APC) on chromosome 5 (5q21). 2/ **Gardener's syndrome:** Polyposis coli, Multiple osteomas, Desmoids, Skin (Epidermal) cysts, Fibromatosis. 3/ **Turcot syndrome:** Polyposis coli, CNS tumors, Medulloblastoma, Glioma, Fibromatosis.
Adenocarcinoma		**Predisposing factors:** IBD. adenomas, polyposis syndrome. Alcohol, Reduced intake of vit A, C & E. Low fibre diet, High fat content. **Morphology:** - Left-sided carcinomas tend to be annular, encircling lesions with early symptoms of obstruction - Right-sided carcinomas tend to grow as polypoid, fungating masses, obstruction is uncommon **Symptomes:** - closer to the anus: change in bowel habit, feeling of incomplete defecation, PR bleeding - A tumor that is large enough to fill the entire lumen of the bowel may cause bowel obstruction **Carcinogenesis:** 1) The APC/B-catenin pathway: mutation of the APC gene, K-ras Mutation , chromosome 18 and p53 2) The DNA mismatch repair genes pathway: Five DNA mismatch repair genes (MSH2, MSH6, MLH1, PMS1, AND PMS2), give rise to the hereditary non polyposis colon carcinoma (HNPCC) syndrome
Carcinoid Tumors		**Morphology:** Ultrastructural features: neurosecretory electron dense bodies in the cytoplasm **Clinical features:** obstruction, intussusception or bleeding, Zollinger-Ellison, Cushing's carcinoid or other syndromes, diarrhea due to excessive secretion of serotonin.
Lymphoma		- Most often low-grade lymphomas arising in mucosal-associated lymphoid tissue (MALT) lymphoma or high-grade non-Hodgkin's lymphomas of B cell type. - The ileocecal region is a favored site for Burkitt's lymphoma.

QUIZ!

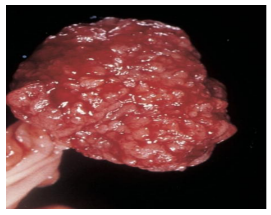
MCQs

01 | A 55-year-old man undergoes routine colonoscopy. A small, raised, mucosal nodule measuring 0.4 cm in diameter is identified in the rectum and resected. The surgical specimen is shown in the image. Microscopic examination reveals goblet cells and absorptive cells with exaggerated crypt architecture, but no signs of nuclear atypia. Which of the following is the most likely diagnosis?



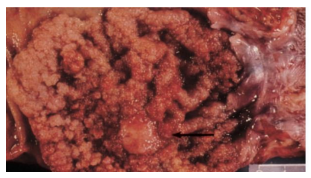
A) Adenocarcinoma	B) Hyperplastic Polyp	C) Inflammatory Polyp	D) Peutz-Jeghers Polyps

02 | A 65-year-old woman undergoes routine colonoscopy. During the procedure, a 2-cm mass is identified in the rectosigmoid region and resected. The surgical specimen is shown in the image . Microscopic examination shows irregular crypts lined by pseudostratified epithelium with hyperchromatic nuclei, without dysplastic features. Which of the following is the most likely diagnosis for this patient's colonic lesion?



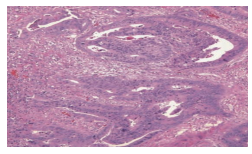
A) Adenocarcinoma	B) Carcinoid Tumor	C) Tubular Adenoma	D) Villous Adenoma

03 | A 63-year-old woman complains of rectal bleeding of 1 week in duration. Laboratory studies show hypochromic, microcytic anemia (hemoglobin = 7.6g/dL and MCV = 70µm3). Colonoscopy reveals a large polypoid mass, which is removed (surgical specimen shown in the image). The arrow points to a malignant tumor. The patient asks about the relative risk of cancer arising in various types of gastrointestinal polyps. Which of the following types of colonic polyps is most likely to undergo malignant transformation?



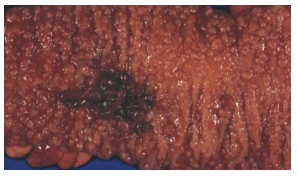
A) Tubular Adenoma	B) Villous Adenoma	C)Hyperplastic Polyp	D) Lymphoid Polyp

04 | A 59-year-old man complains of progressive weakness. His friends have noticed that he has become pale, and he reports that his stools are tinged with blood. On abdominal palpation, there is fullness in the right lower quadrant. Laboratory studies show iron-deficiency anemia, with a hemoglobin level of 7.4g/dL. Stool specimens are positive for occult blood. Colonoscopy reveals an elevated and centrally ulcerated lesion of the sigmoid colon. The biopsy is shown in the image. Which of the following is the most likely diagnosis?



A) Gastrointestinal stromal tumor	B) Mucinous Cystadenoma	C) Lymphoma	D) Adenocarcinoma

05 | A portion of the large bowel was removed from a 34-year-old man with a familial disease that affects his gastrointestinal tract. The surgical specimen is shown in the image. This patient most likely carries a germline mutation in which of the following genes?



A) APC	B) C-myc	C) p53	D) Ras

MCQs Answer key	01	02	03	04	05
	B	C	B	D	A

QUIZ!

MCQs

06 | Defect in which of the following genes can lead to Familial polyposis coli (FPC)?			
A) P53 located on the short arm of chromosome 5 (5p21)	B) P53 located on the long arm of chromosome 5 (5q21)	C) APC gene located on the long arm of chromosome 5 (5q21)	D) APC gene located on the short arm of chromosome 5 (5p21)
07 | Which of the following is true about Peutz-Jeghers syndrome ?			
A) Autosomal recessive	B) Increase risk of developing Glioblastoma	C) Autosomal dominant	D) Autosomal dominant
08 | Right-sided Colorectal carcinoma usually present with ?			
A) Iron deficiency anemia	B) obstruction	C) Annular cricling lesions	D) Frank bleeding
09 | A 59-year-old man complains of progressive weakness. His friends have noticed that he has become pale, and he reports that his stools are tinged with blood. On abdominal palpation, there is fullness in the right lower quadrant. Laboratory studies show iron-deficiency anemia, Stool specimens are positive for occult blood. Colonoscopy reveals an elevated and centrally ulcerated lesion of the sigmoid colon. Which of the following is the most likely diagnosis?			
A) Gastrointestinal stromal tumor	B) Carcinoid tumor	C) Lymphoma	D) Adenocarcinoma
10 | Which one of the following is a neoplastic polyp ?			
A) Lymphoid polyps	B) Adenoma	C) Inflammatory polyps	D)Hyperplastic polyps
11 | Which one of the following abnormalities associated with adenocarcinoma of the colon ?			
A) Increase activity of TP53	B) Over stimulation of ACP gene	C) Increase activity of β-catenin.	D) None of the above
12 | Right-sided carcinoma (Colorectal carcinoma) associated with?			
A) Sickle cell anemia	B) Hypochromic microcytic anemia	C) Iron deficiency anemia	D) Bleeding

MCQs Answer key	06	07	08	09	10	11	12
	C	D	A	D	B	C	C

" اللهم علمنا ماينفعنا ، وانفعنا بما علمتنا وزدنا علما يارب العالمين "

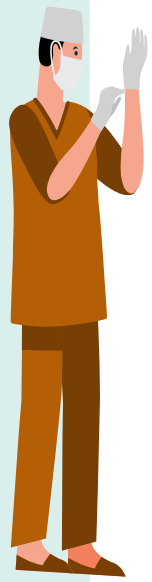
Team leaders

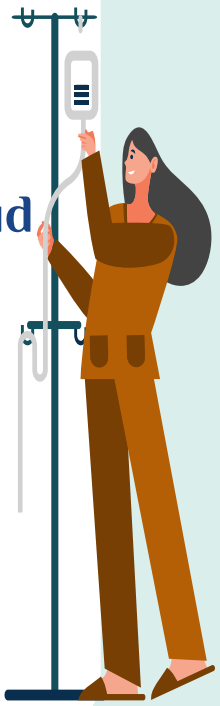
Hamad Almousa

Fatimah Alhilal

Team members

- Hadi Alhemsi
- Abdulrahman Almebki
- Ghada Alabdi
- Khalid Alsubaie
- Hassan alshurafa
- Mariam Alruhaimi
- Abdulrahman Barashid
- Mohammad alsayyari
- Renad Alhomaidi
- Mansour Albawardy
- Faisal Alfadel
- Mona Alabdely
- Abdulaziz redwan
- Nada Bin Obied
- Ghaida Almarshoud
- Abdulelah Saad
- Shayma Alghanoum
- Raghad Alassiry
- Fahad Alajmi
- Yasmine alqarni
- Rania almutiri





This Lecture done by

- Organizer
- Member
- Note taker
- Reviser

Special thanks to **Renad alhomaidi** for her amazing work & efforts

Contact us through :
Pathology439@Gmail.com