COLON CARCINOMA

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Pathology

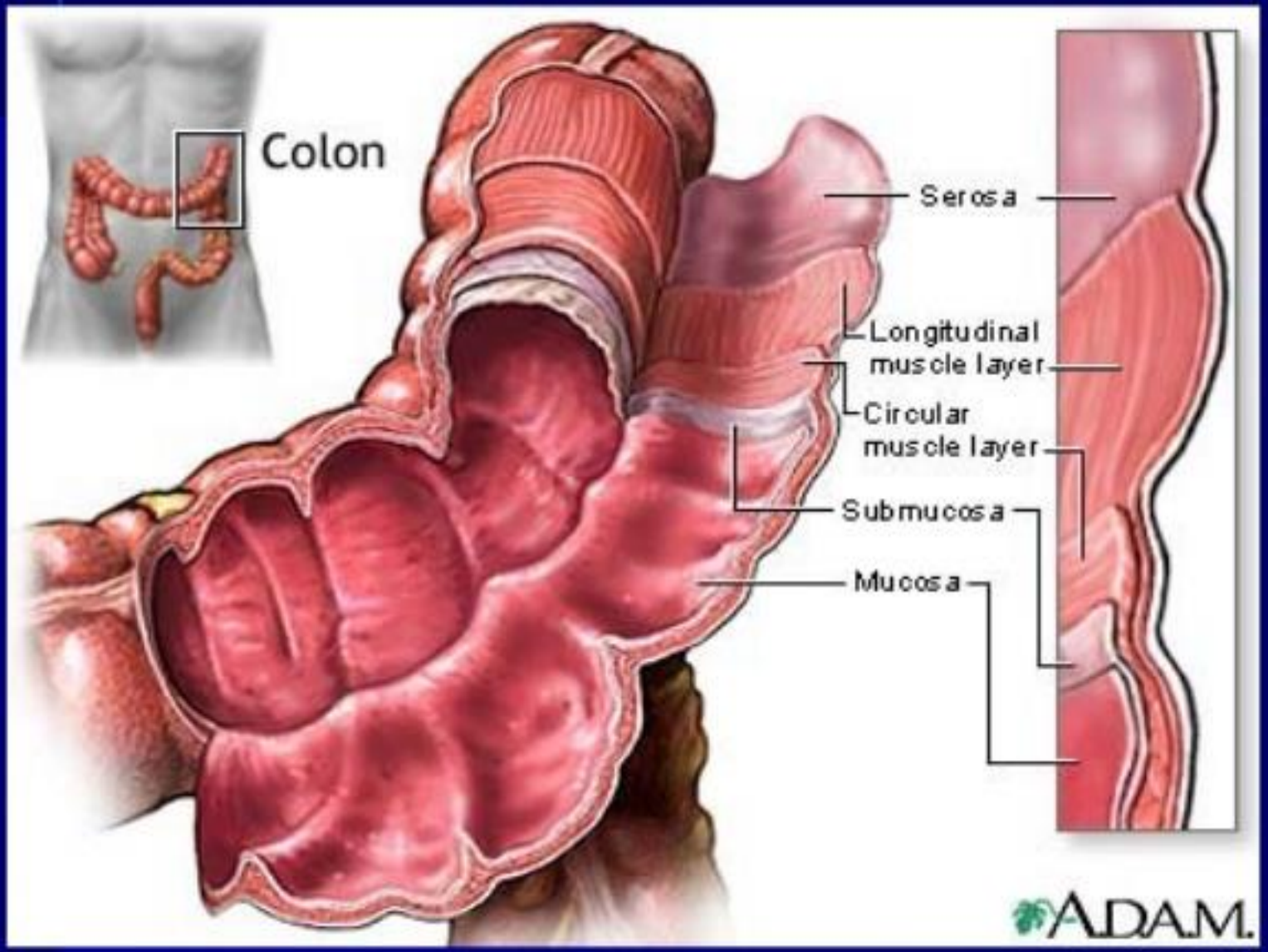
Anatomy

- The colon is 150 cm long and is subdivided into the cecum, ascending, transverse, descending, and sigmoid colon. The ileocecal valve forms the junction between the small and large bowel and demarcates the cecum from the ascending colon.
- The transverse and sigmoid colons have a mesentery and are entirely intraperitoneal. The ascending and descending colons are partially extraperitoneal.
- The superior mesenteric artery supplies the colon between the ileocecal valve and the splenic flexure. The inferior mesenteric artery supplies the colon distal to the splenic flexure.

Anatomy

- The colonic wall comprises 4 layers, including the :
  - Mucosa
  - submucosa
  - muscularis propria (inner circular layer and outer longitudinal layer, comprising 3 narrow bands tenia Coli)
  - and serosa

Anatomy


Colon
Serosa
Longitudinal muscle layer
Circular muscle layer
Submucosa
Mucosa
A.D.A.M.

INTRODUCTION

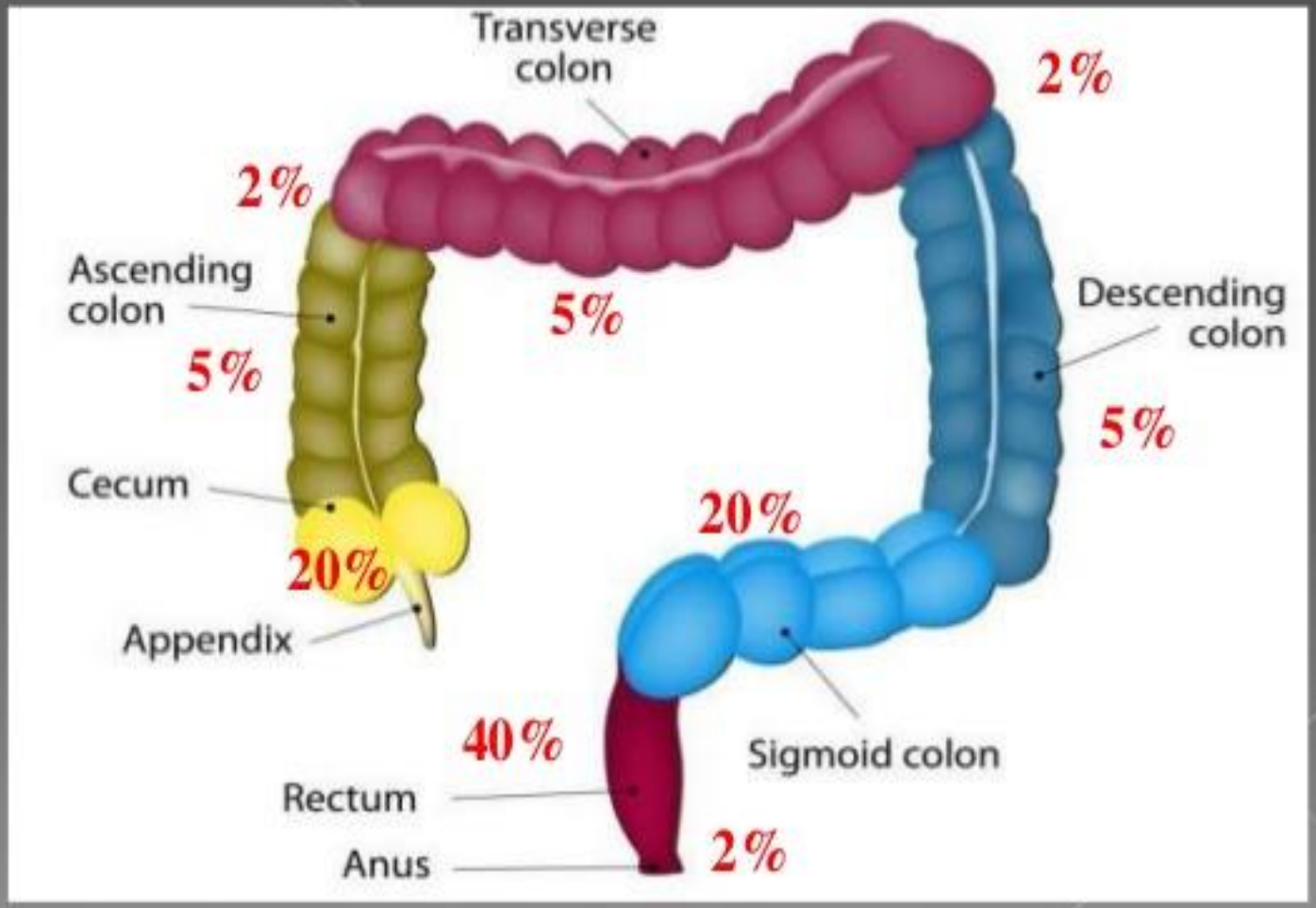
- CA COLON IS MOST COMMON MALIGNANCY OF GI TRACT
- INCIDENCE INCREASES WITH AGE.MORE COMMON IN 7^{TH} AND 8^{TH} DECADE OF LIFE
- COMMON IN MALES(M:F::3:2)
- CLINICAL FEATURES DEPEND ON:
  1. TUMOR LOCATION
  2. TUMOR SIZE
  3. PRESENCE OF METASTASIS
- 20% CASES PRESENT AS AN EMERGENCY CASE OF ACUTE INTESTINAL OBSTRUCTION

WHO Classification of CRC

- Adenocarcinoma in situ / severe dysplasia
- Adenocarcinoma
- Mucinous (colloid) adenocarcinoma (>50% mucinous)
- Signet ring cell carcinoma (>50% signet ring cells)
- Squamous cell (epidermoid) carcinoma
- Adenosquamous carcinoma
- Small-cell (oat cell) carcinoma
- Medullary carcinoma
- Undifferentiated Carcinoma

CARCINOMA COLON

- Most commonly adenocarcinoma.



HIGH RISK FACTORS

- Familial adenomatous polyposis
- Hereditary nonpolyposis colon cancer(Lynch syndrome I & Lynch syndrome II)
- Family history of colorectal carcinoma
- Age >50yrs
- Inflammatory bowel disease(UC & CD)
- Poor diet (increased fat, red meat and decreased fibre)
- Alcohol and smoking
- Ureterosigmoidostomy (100-500times increased risk)

Familial polyposis in which mucosal surface of the colon is a carpet of small adenomatous polyps. Even though they are small , there is a 100% risk over time for development of adenocarcinoma, for which total colectomy is recommended

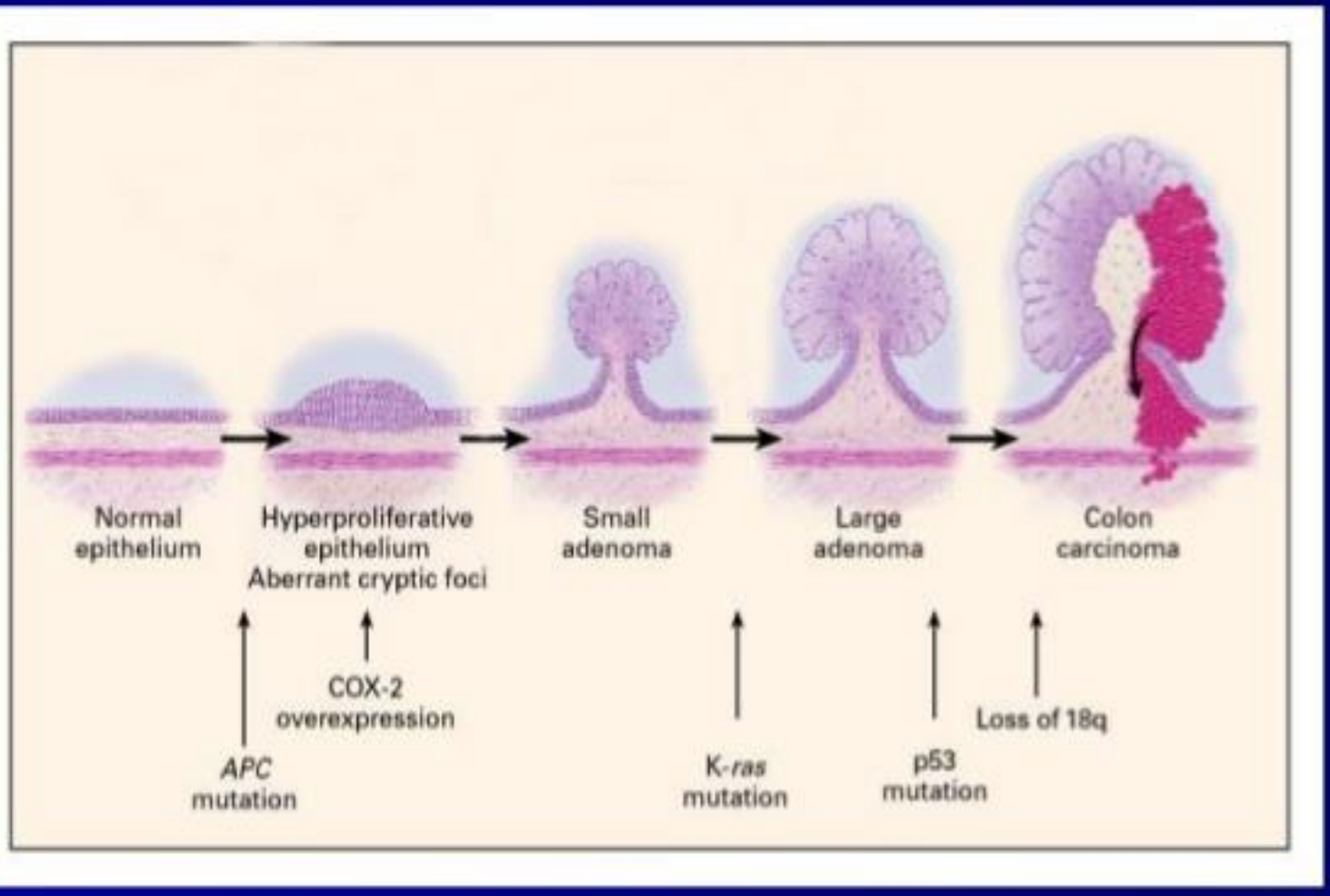
PATHOLOGY

- Adenoma-carcinoma sequence
  - Between 70-90 % of colorectal cancer arise from adenomatous polyp.
  - the adenoma- carcinoma sequence is multi-step

    process involving sequential mutations or deletions of genes
  - Polyp with tubular histological pattern have the least malignant potential , whereas villous adenomatuos polyp have the highest malignant potential
  - The larger the polyp (more than 2cm in diameter) the greater the risk of cancer

PATHOLOGY

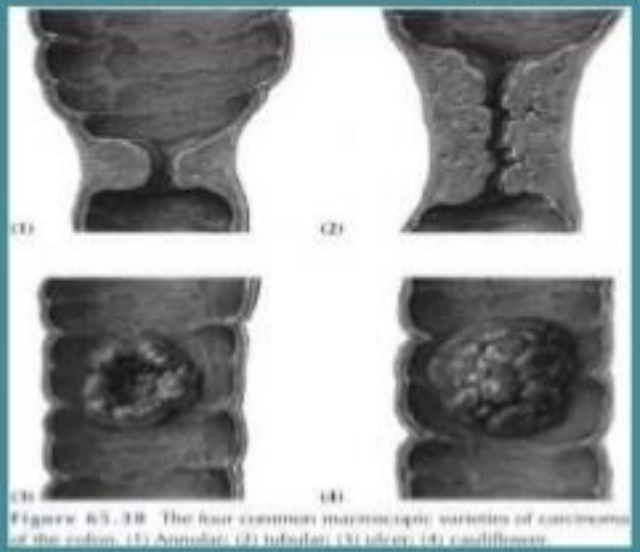
Adenoma-carcinoma sequence



GROSS PATHOLOGY..

Macroscopically the tumours may take one or four forms.

1.Annular sticture – Tends to give rise to obstructive symptoms,common in left colon.
2.Tubular stricture – Common in left colon and the rectosigmoid junction.
3.Ulcerative lesion – Ascending colon or caecum.
4.Cauliflower lesion – More in rt colon,fleshy & bulky polypoid lesion.



Macroscopic appearance of colorectal cancer

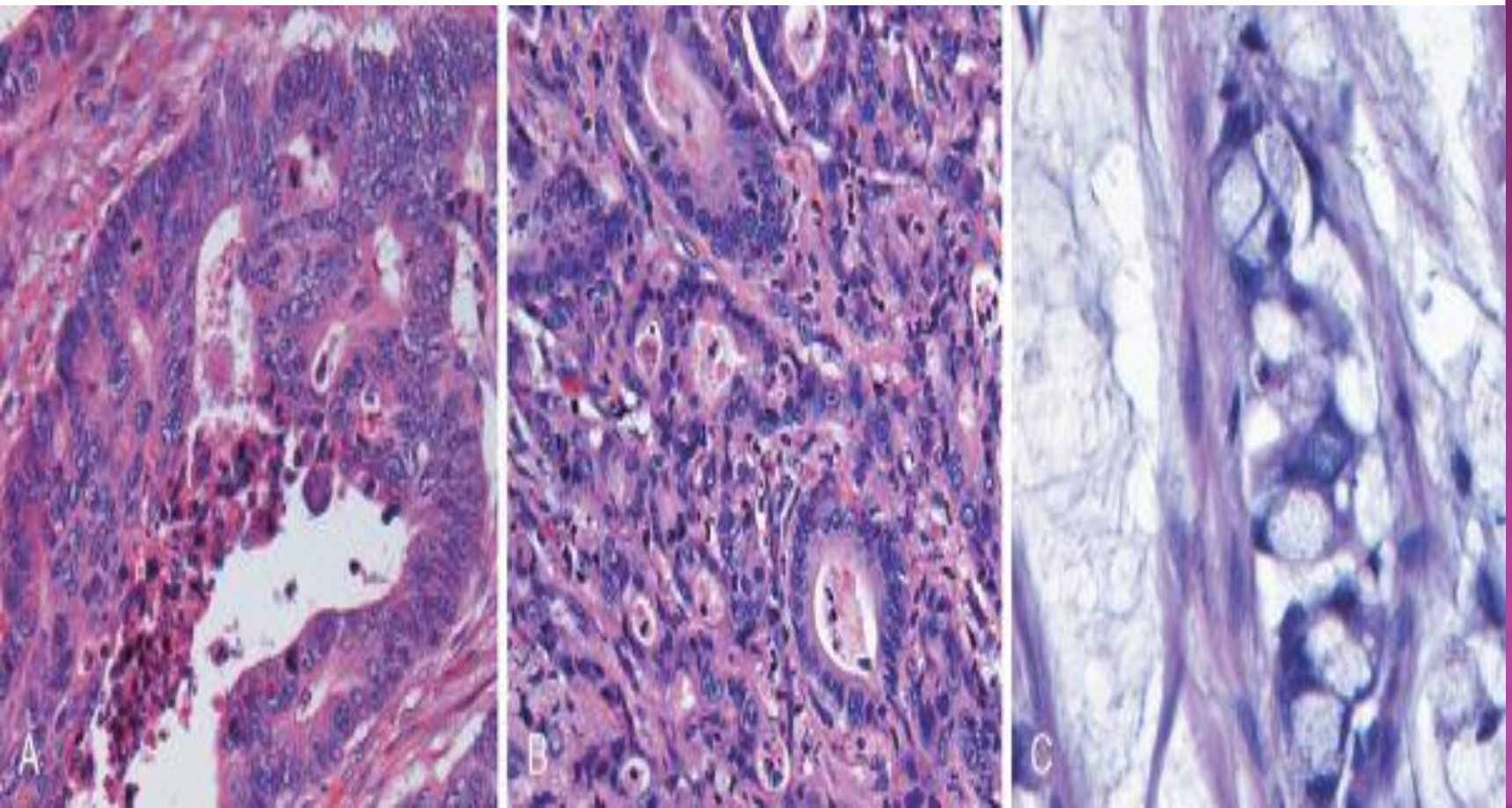
Normal colon

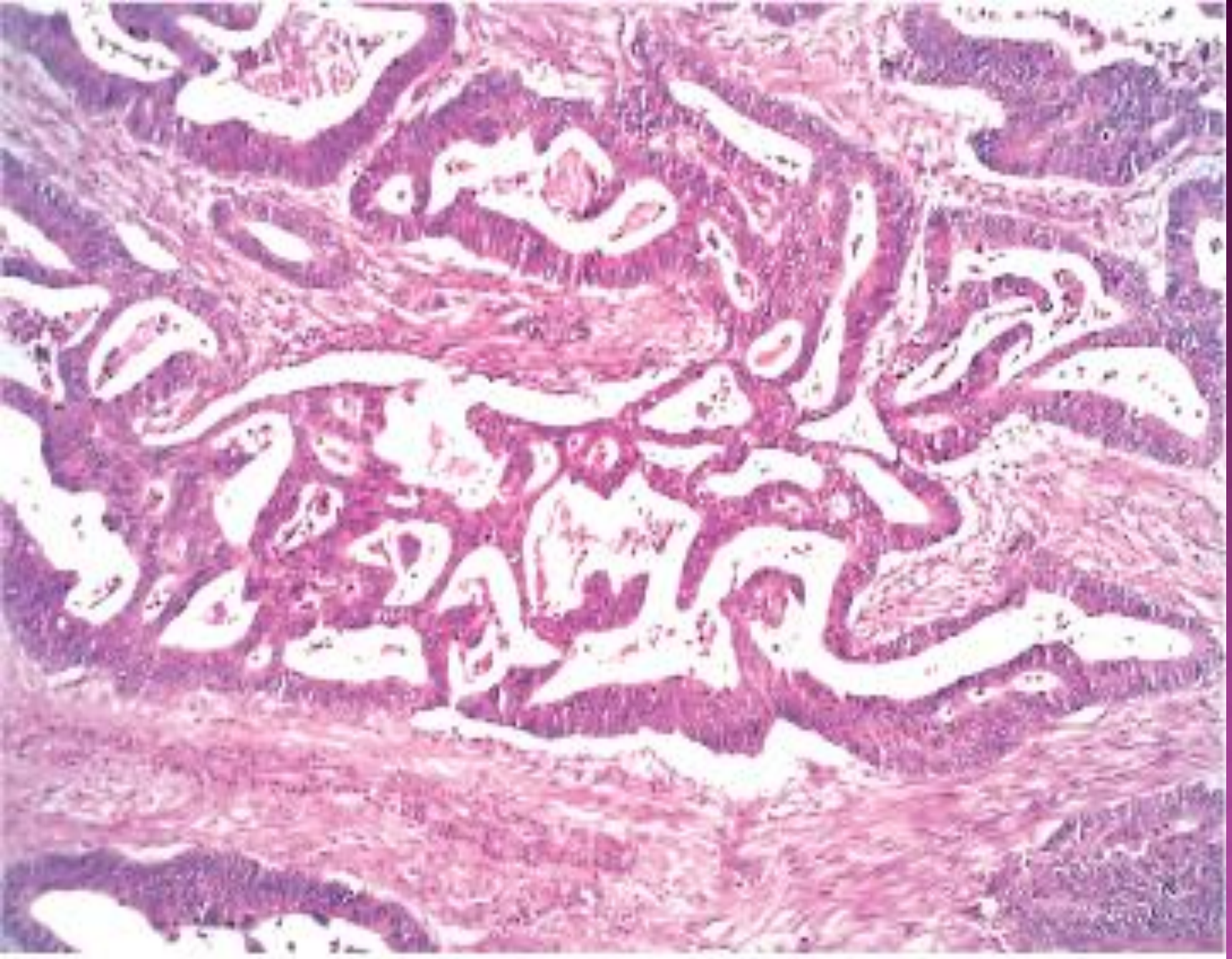
Colon cancer

A typical tubular adenoma in the colon

Exophitic colon cancer

Histologic appearance of colorectal carcinoma. A, Well-differentiated adenocarcinoma. Note the elongated, hyperchromatic nuclei. Necrotic debris, present in the gland lumen, is typical. B, Poorly differentiated adenocarcinoma forms a few glands but is largely composed of infiltrating nests of tumor cells. C, Mucinous adenocarcinoma with signet-ring cells and extracellular mucin pools.





CLINICAL PRESENTATION

- Symptoms are generally absent until late stage.The symptoms are subtle and vague
- Patients commonly present with

  Abdominal pain

  Rectal bleed

  Recent change in bowel habits

  Involuntary weight loss

  Mass per abdomen

CLINICAL FEATURES DEPENDING ON LOCATION

	RIGHT COLON	LEFT COLON
SYMPTOMS	WEIGHT LOSS WEAKNESS BLEEDING	CONSTIPATION ALTERNATING BOWEL PATTERNS COLICKY PAIN DECREASED STOOL CALIBER RECTAL BLEEDING PARADOXICAL DIARRHOEA ON PARTIAL OBSTRUCTION
SIGNS	IRON DEFICIENCY ANAEMIA PALOR KOILONYCHIA GLOSSITIS CHEILITIS	BRIGHT RED BLOOD PER RECTUM LARGE BOWEL OBSTRUCTION

Colorectal Cancer

Clinical features

Right colon | Rectum | Left colon

Change in bowel habit

Right colon	Rectum	Left colon
Diarrhea	Tenesmus	Constipation
Anemia	"Blood & mucus Discharge"	Bleeding PR

OTHER CLINICAL FEATURES

- **Local invasion**
  - Bladder symptoms
  - Female genital tract symptoms
- **Metastasis**
  - Liver (hepatic pain, jaundice)
  - Lung (cough)
  - Bone (leucoerythroblastic anaemia)

DIAGNOSIS

- Complete history
- Physical examination /DRE
- Routine investigations
- Confirmatory- Biopsy
- Staging workup
  - CXR
  - Barium enema
  - Colonoscopy
  - USG
  - CECT abdomen- pelvis
  - Virtual colonoscopy
  - MRI
  - PET
- Gold standard- Colonoscopy+ Biopsy

- Others
  - FOBT
  - Stool cytology
  - CEA
  - IHC markers- keratin
  - Molecular markers- oncogenes
  - DNA flow cytometry
  - Immunoscintigraphy
- Screening investigations

Table 1. TNM clinical classification—International Union Against Cancer system	
T—Primary tumor	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ: intraepithelial or invasion of lamina propria
T1	Tumor invades submucosa
T2	Tumor invades muscularis propria
T3	Tumor invades through muscularis propria into subserosa or into non-peritonealized pericolic or perirectal tissues
T4	Tumor directly invades other organs or structures and/or perforates visceral peritoneum
N—Regional lymph nodes	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in 1 to 3 regional lymph nodes
N2	Metastasis in 4 or more regional lymph nodes
M—Distant metastasis	
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis

Staging of the tumor

The TNM Staging System

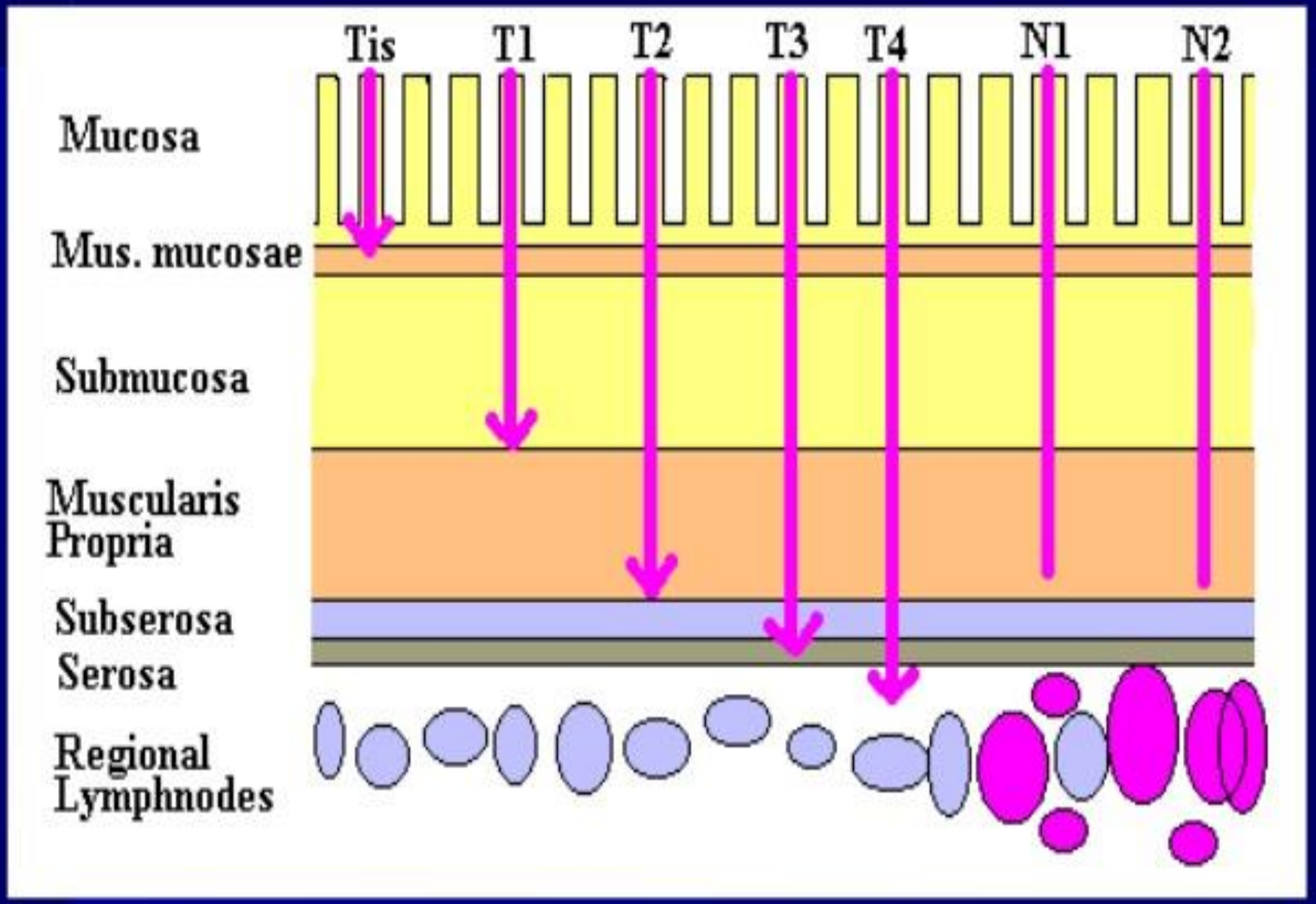
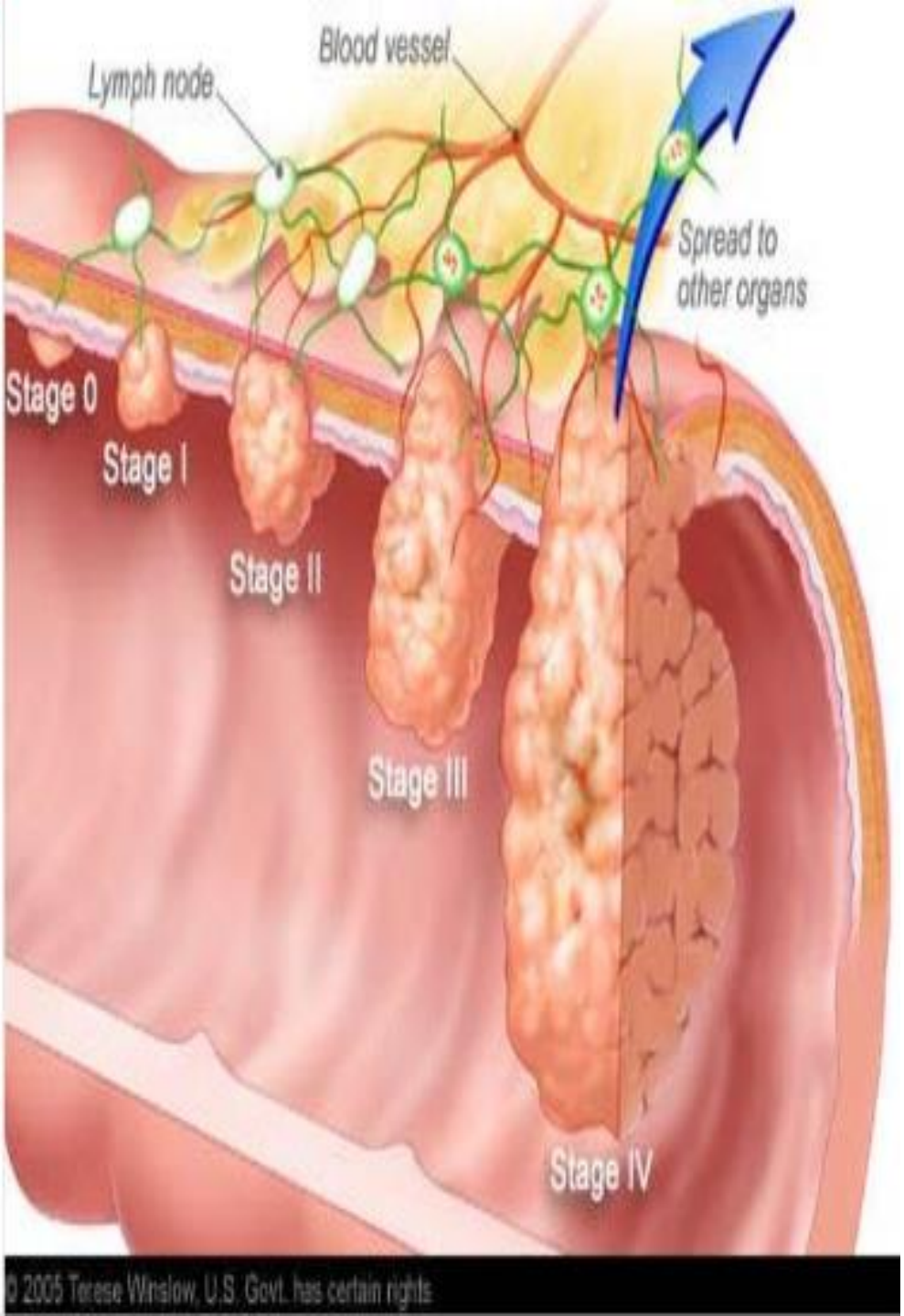


Table 1

AJCC TNM Staging System for Colorectal Cancer

Stage	Primary Tumor (T)	Regional Lymph Nodes (N)	Distant Metastases (M)
0	Tis	N0	M0
I	T1/2	N0	M0
IIA	T3	N0	M0
IIB	T4	N0	M0
IIIA	T1/2	N1	M0
IIIB	T3/4	N1	M0
IIIC	Any T	N2	M0
IV	Any T	Any N	M1

Adapted, with permission, from American Joint Commission on Cancer: *AJCC Cancer Staging Manual*, 6th ed. New York, Springer-Verlag, 2002.




10
Ways to Reduce Your Risk of
Colon Cancer
3
QUIT
SMOKING
4
CUT RED AND PROCESSED MEATS FROM YOUR DIET
5
GET ENOUGH VITAMIN D
6
EAT FIBER-RICH FOODS
7
AVOID UNNECESSARY ANTIBIOTICS
8
EAT CANCER-FIGHTING FOODS
9
DRINK LESS ALCOHOL
2
FIGHT OBESITY
1
EXERCISE DAILY
10
GET REGULAR SCREENINGS
Top10 Home Remedies