

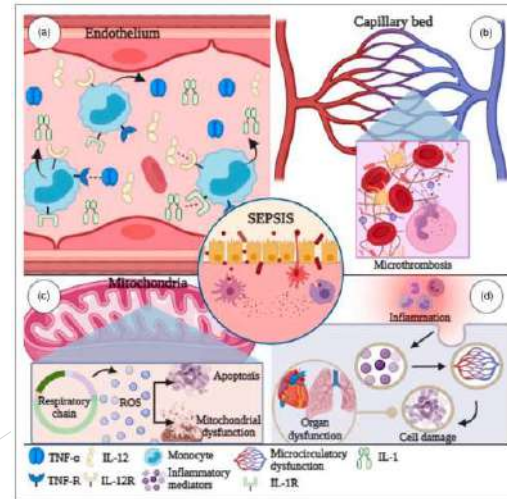
INFLAMMATION LAB



Inflammation 1

Sura Al Rawabdeh, M.D.

25-10-2023





Edema



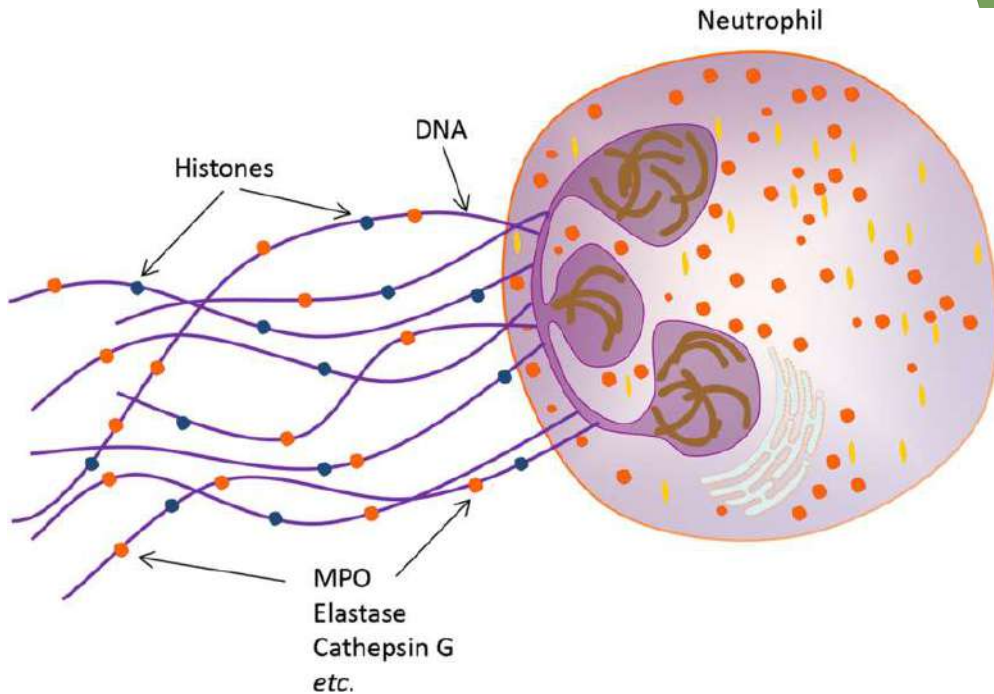
Vasodilation



- ▶ This streaking follows the course of the lymphatic channels and indicates the presence of lymphangitis



painful enlargement of the draining lymph nodes, indicating lymphadenitis.

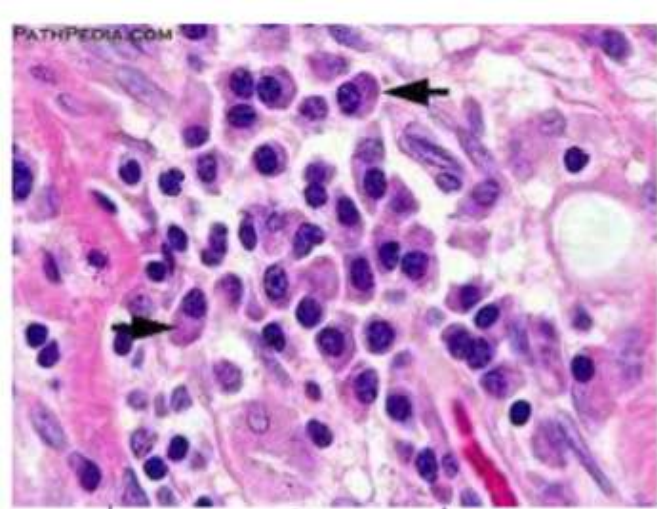


The sticky web-like structure of NET is mainly composed of extracellular DNA. These web-like structures are decorated with histones and neutrophil granule proteins such as myeloperoxidase (MPO), elastase, and cathepsin G.

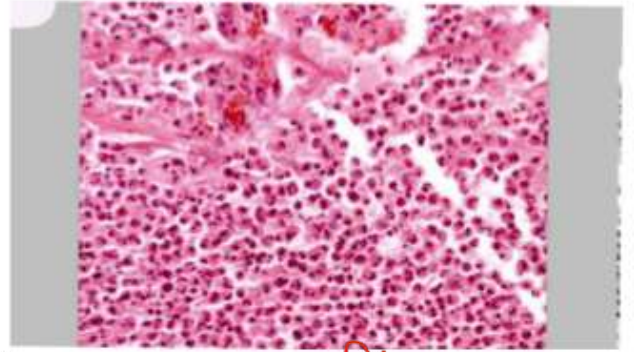
INFLAMMATION II

DR Sura Al Rawabdeh MD

30-10-2023



① Acute inflammation



② chronic inflammation

cachexia

- Pathologic state characterized by weight loss, muscle atrophy, and anorexia that accompanies some chronic infections and cancers. Explained by sustained production of TNF.

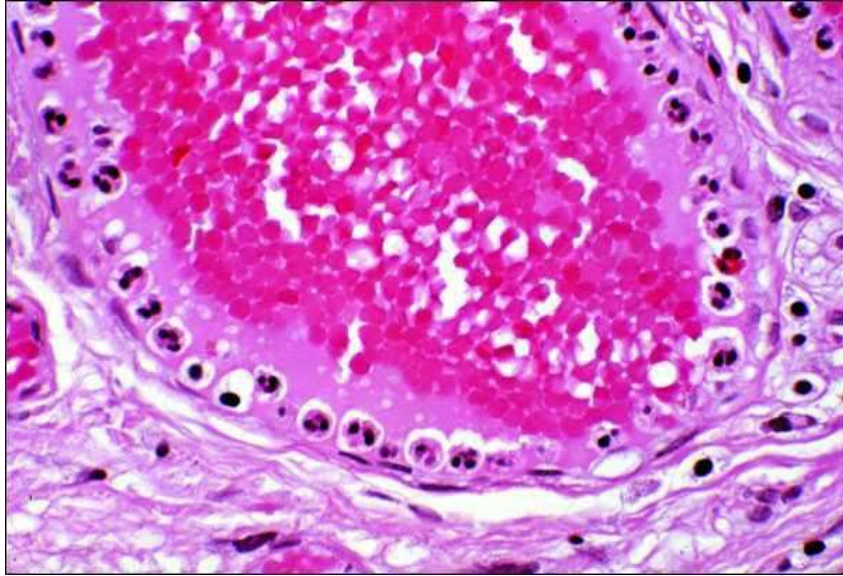
③



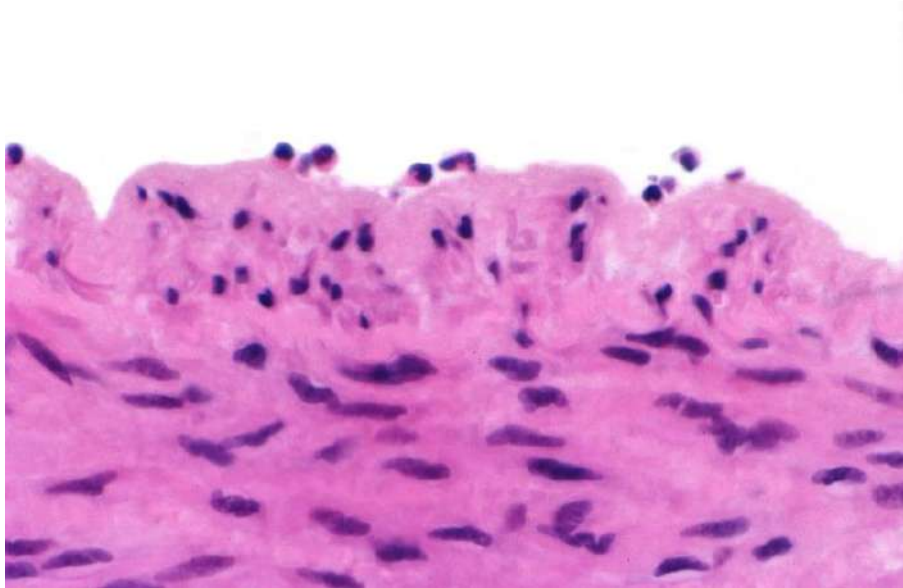
*Peritoneal effusion an example of serous inflammation



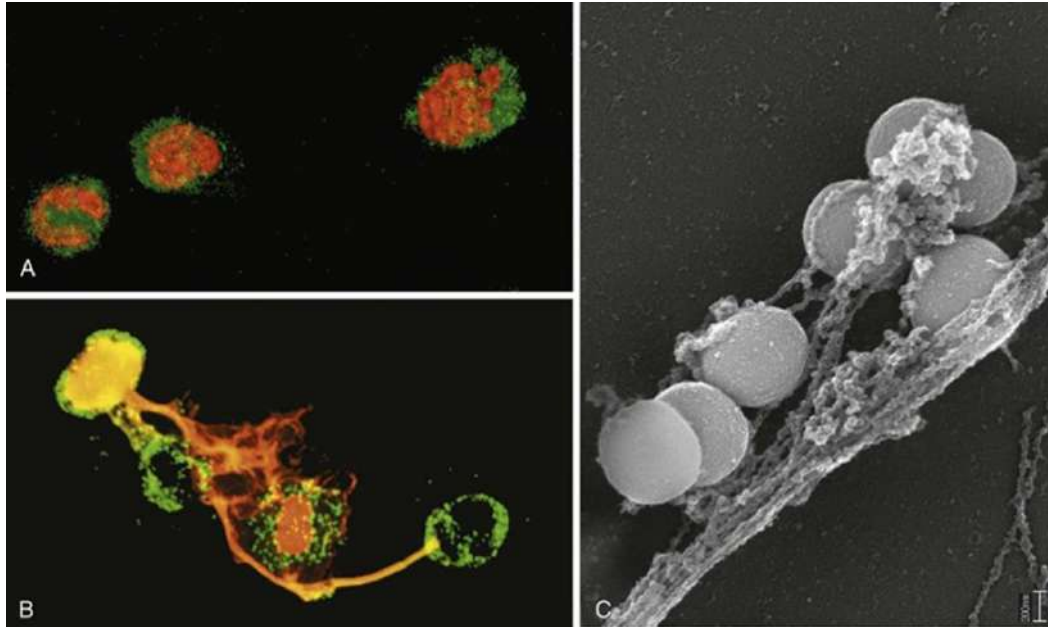
Neutrophil Margination



Neutrophil Margination



Neutrophilic Extracellular Traps (NETs)



Inflammation IV

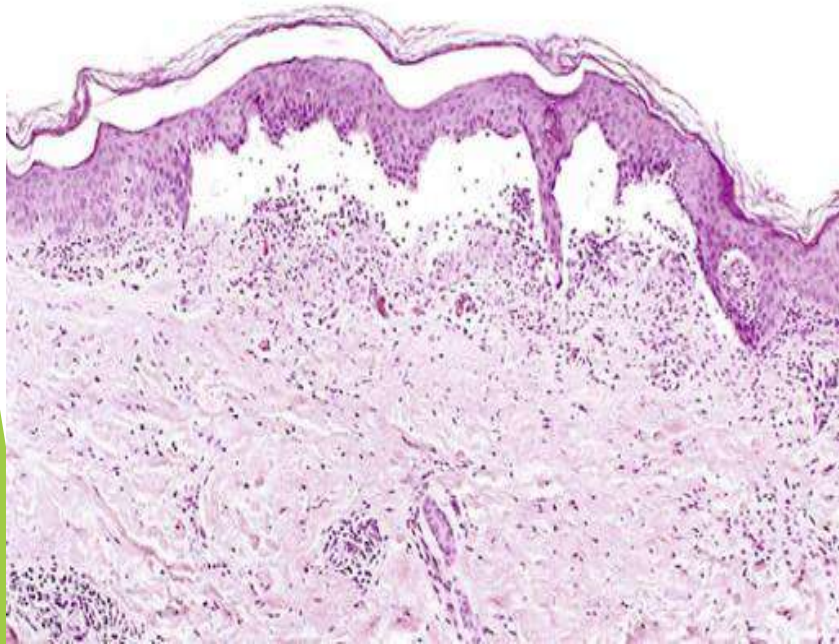
Morphology of Inflammation

Dr. Sura Al-Rawabdeh M.D.

6-11-2023

Serous inflammation

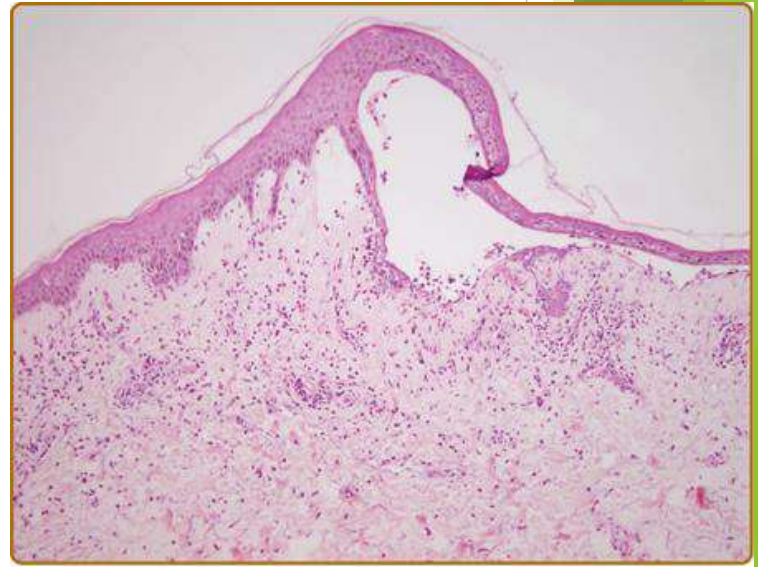
Marked by the exudation of cell-poor fluid into spaces created by injury to surface epithelia or into body cavities lined by the peritoneum, pleura, or pericardium.



Burn Bister

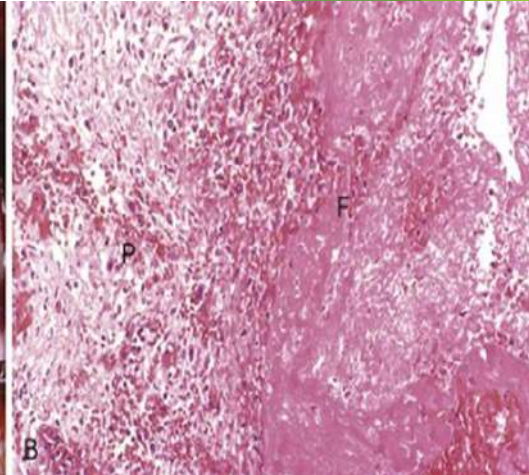
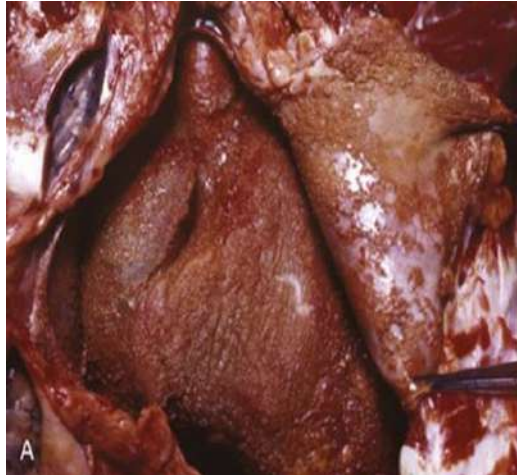
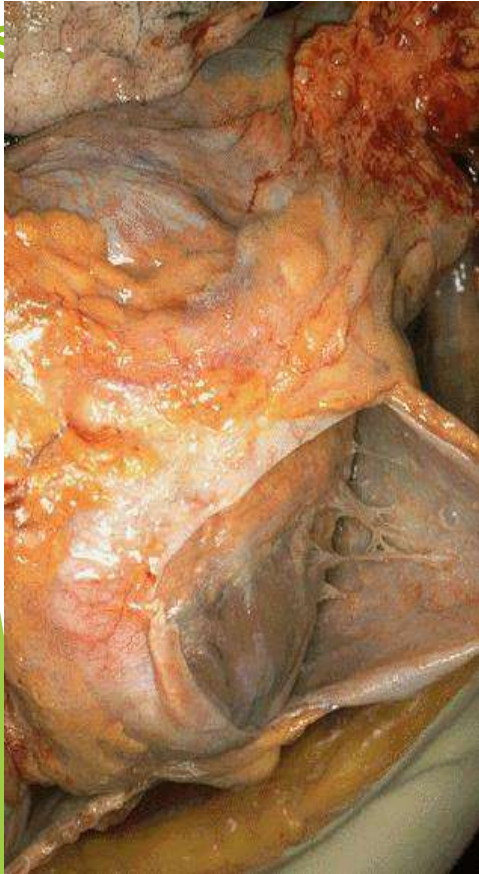
❖ skin blister

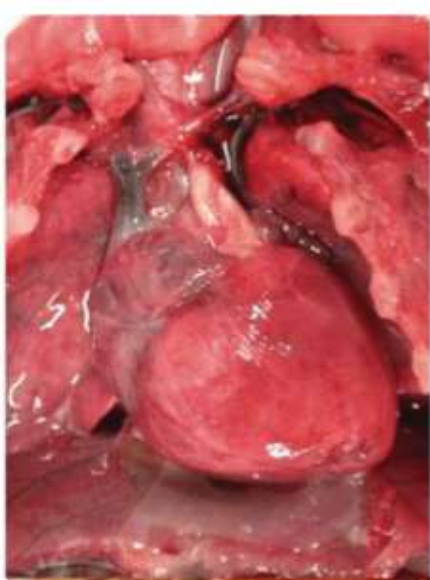
- ▶ Resulting from a burn or viral infection.
- ▶ Represents accumulation of serous fluid within or immediately beneath the damaged epidermis of the skin



Fibrinous Pericarditis

A fibrinous exudate develops when the vascular leaks are large or there is a local procoagulant

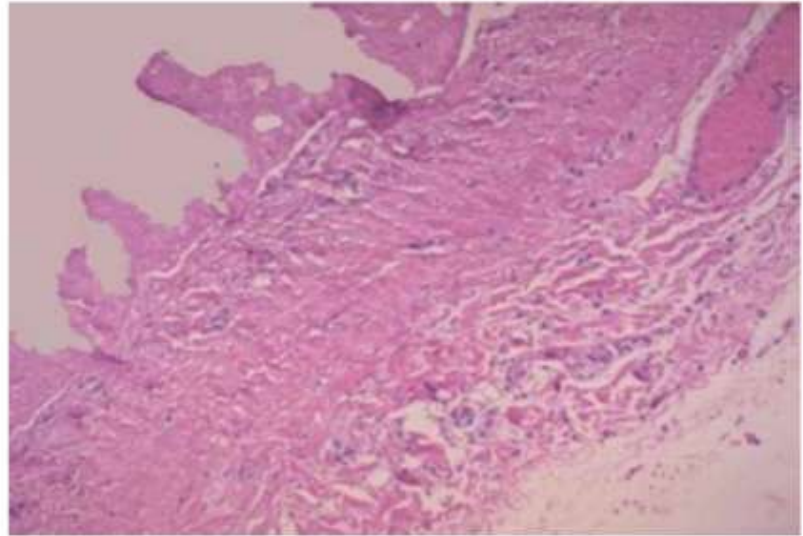




* Fibrinous inflammation:
Grossly
Normally the
visceral pericardium is translucent



The pericardial surface is dry with
a coarse granular appearance caused
by fibrinous exudate

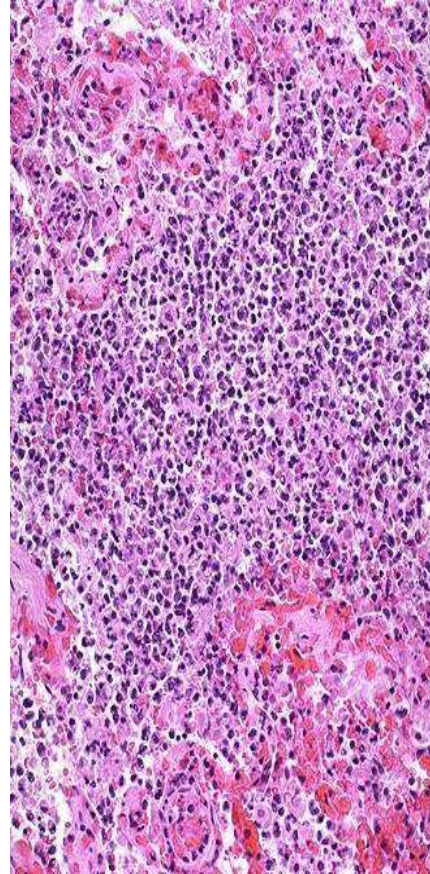


the pericardial surface here shows strands of pink fibrin extending outward. There is underlying inflammation. fibrin appears as an eosinophilic meshwork of threads

Subcutaneous Abscess



Lung Abscess

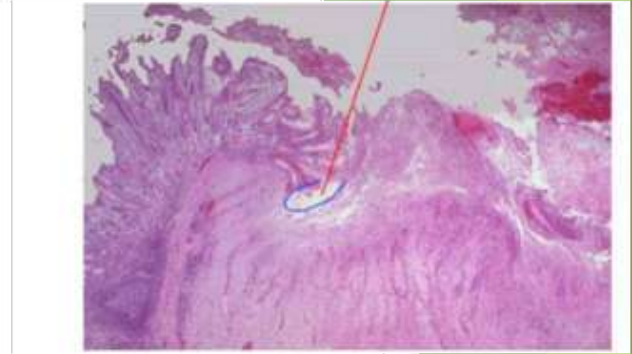
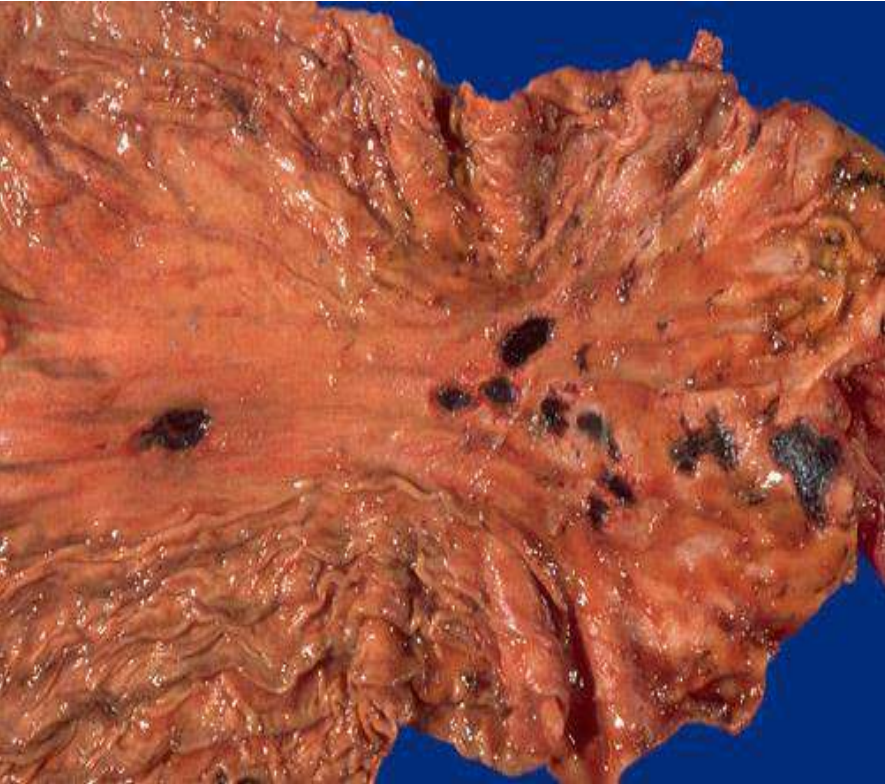


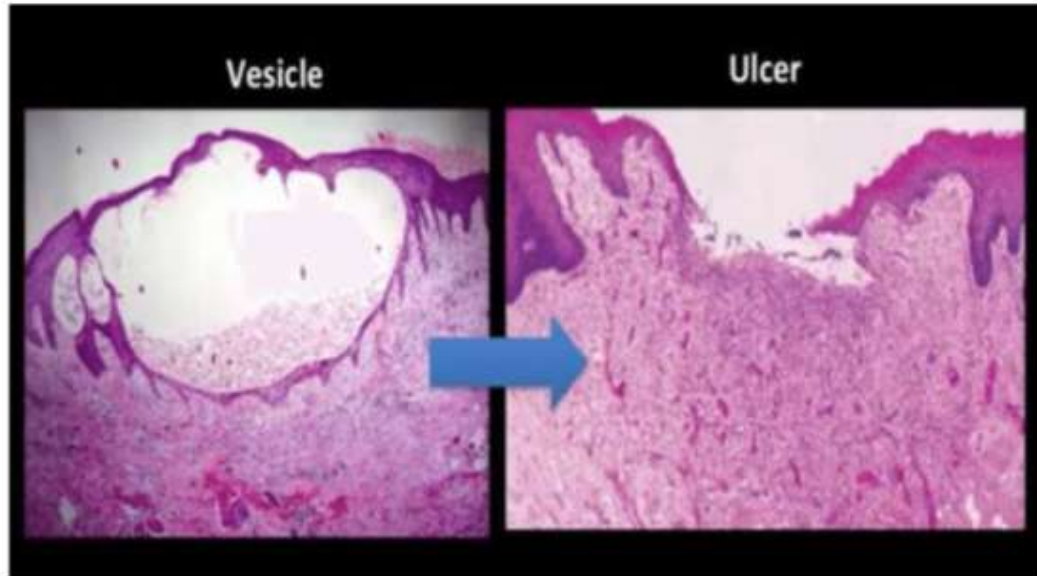
Ulcers



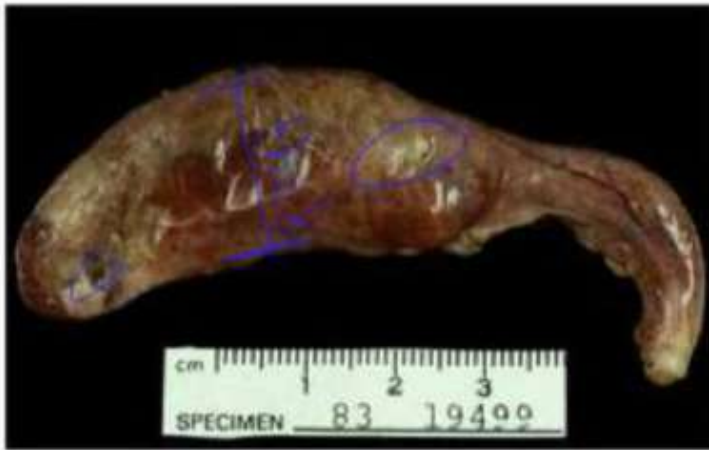
- ▶ An ulcer is a local defect, or excavation, of the surface of an organ or tissue that is produced by the sloughing (shedding) of inflamed necrotic tissue.
- ▶ Ulceration can occur only when tissue necrosis and resultant inflammation exist on or near a surface

Gastric Ulcers

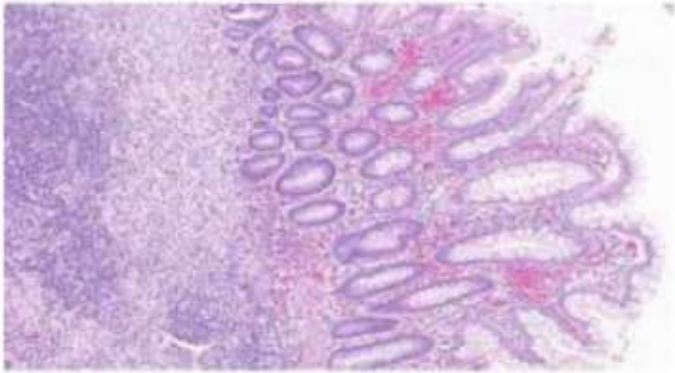




Sloughing (Shedding)
of inflamed necrotic tissue



A common example of an acute suppurative inflammation is acute appendicitis

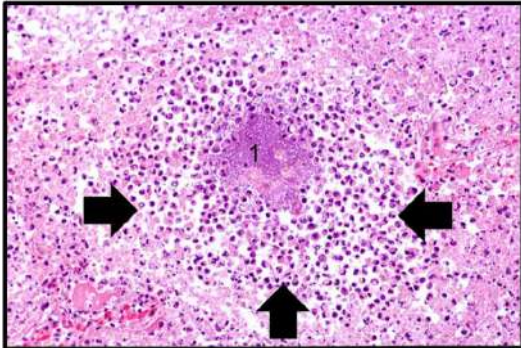


Foot Ulcer



Gross

Variably sized abscesses are distributed randomly throughout all lobes of the liver.
Abscess is a collection of neutrophils



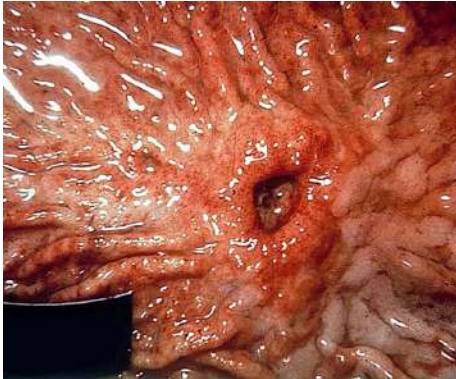
Abscess zones:

1. central region with necrotic leukocytes and tissue cells.
2. zone of preserved neutrophils .
3. outer most zone composed of vascular dilation, parenchymal and fibroblastic proliferation

ULCERS

Gross

ulcer: An ulcer is a local defect, or excavation, of the surface of an organ or tissue that is produced by the sloughing (shedding) of inflamed necrotic tissue



gastric ulcer : loss of teh gastric epithellium mucosa 'shedding'

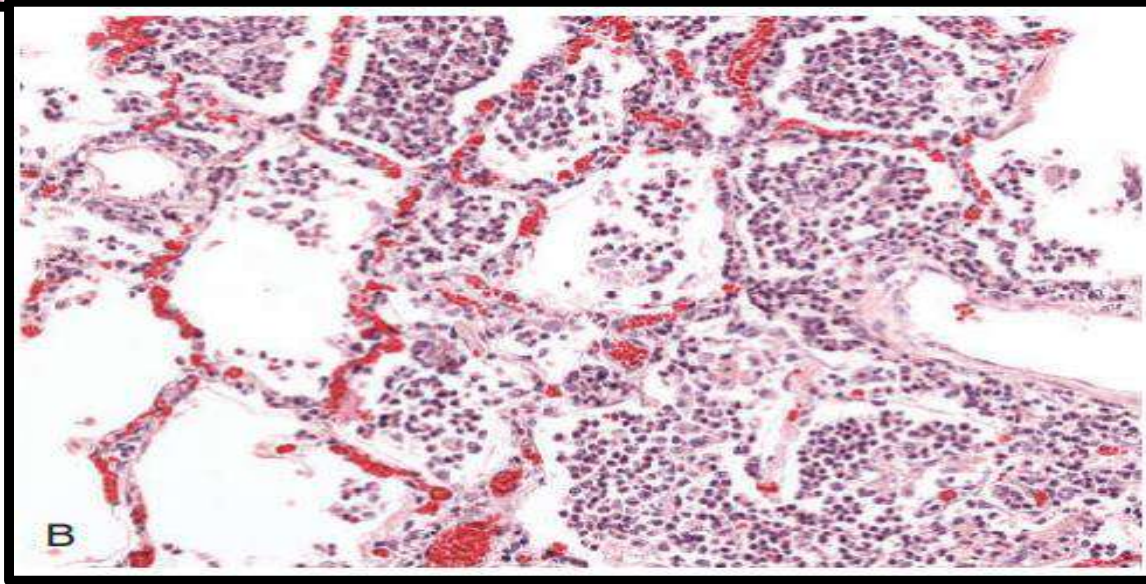
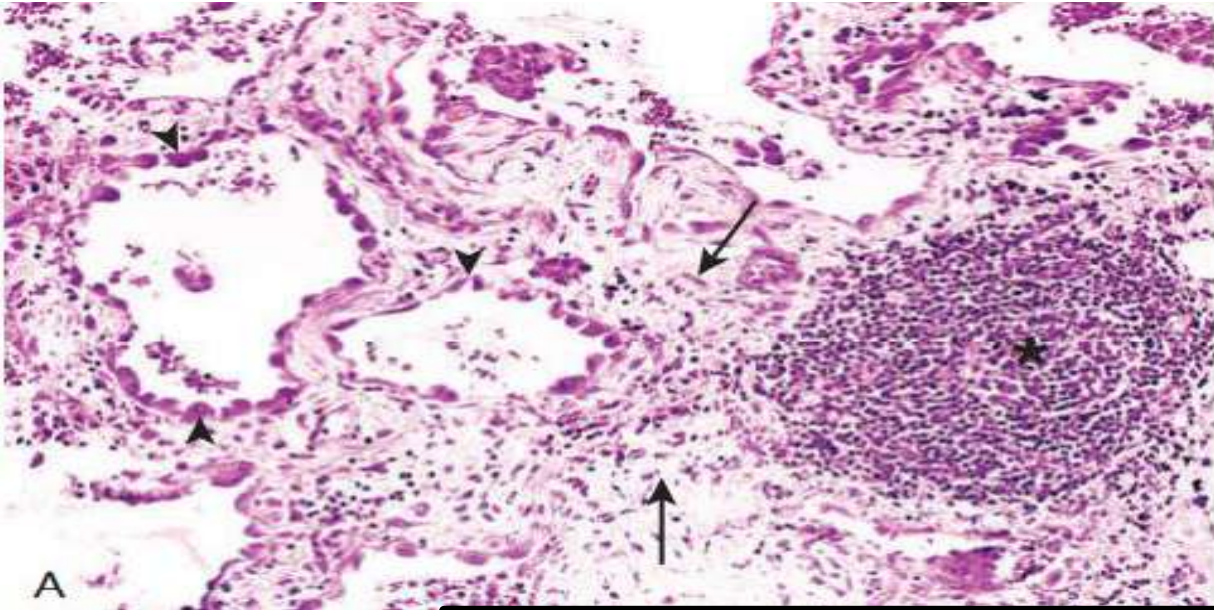


skin ulcer : loss of epidermis by sloughing

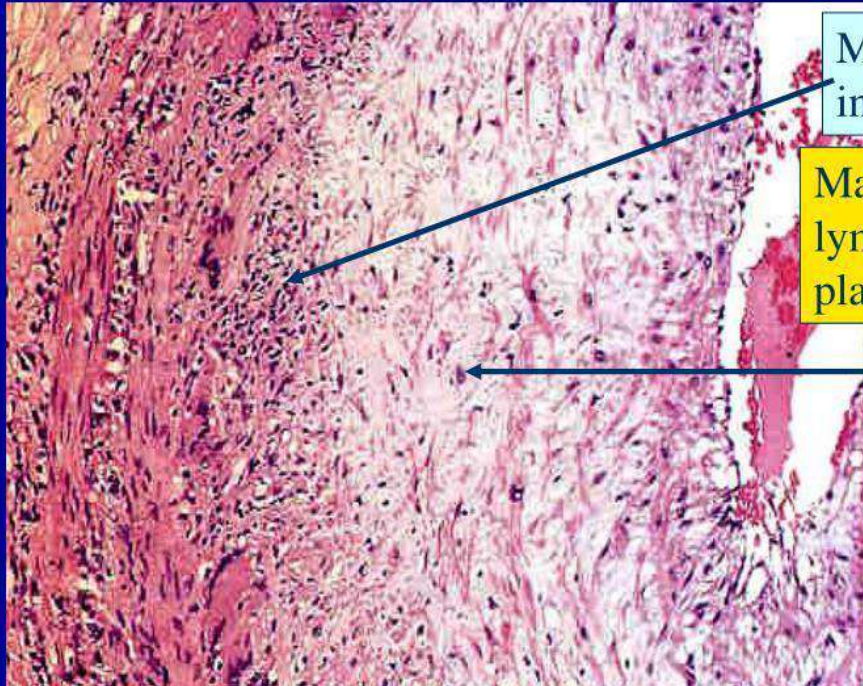
Chronic Inflammation Tissue Repair I

Sura Al Rawabdeh, MD.

8/11/2023



Histopathology of chronic inflammation



Mononuclear cell infiltration (3 cell types):

Macrophages,
lymphocytes,
plasma cells

Tissue destruction
with replacement of
damaged tissue by
well-vascularized
young fibrous tissue

- healing by connective tissue replacement of damaged tissue,

Histology;

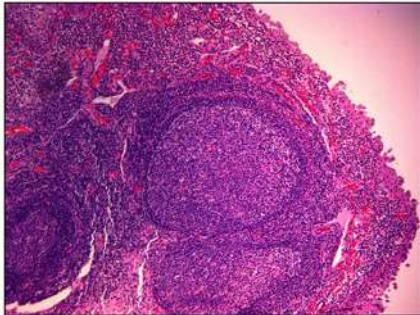
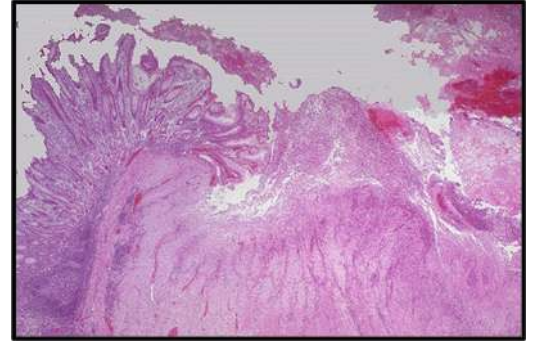
acute ulcer:

intense polymorphonuclear infiltration and vascular dilation in the margins of the defect.

Chronic ulcer:

the margins and base of the ulcer develop fibroblast proliferation, scarring, and the accumulation of lymphocytes, macrophages, and plasma cells.

when chronic ulcer there is a defect without many neutrophils but have mononuclear cells , lymphocytes macrophages plasma cells

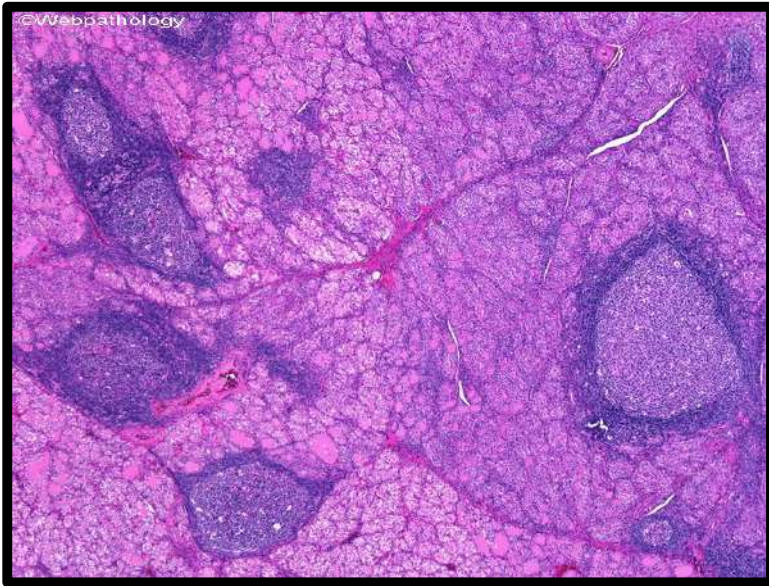


Tertiary lymphoid organs:

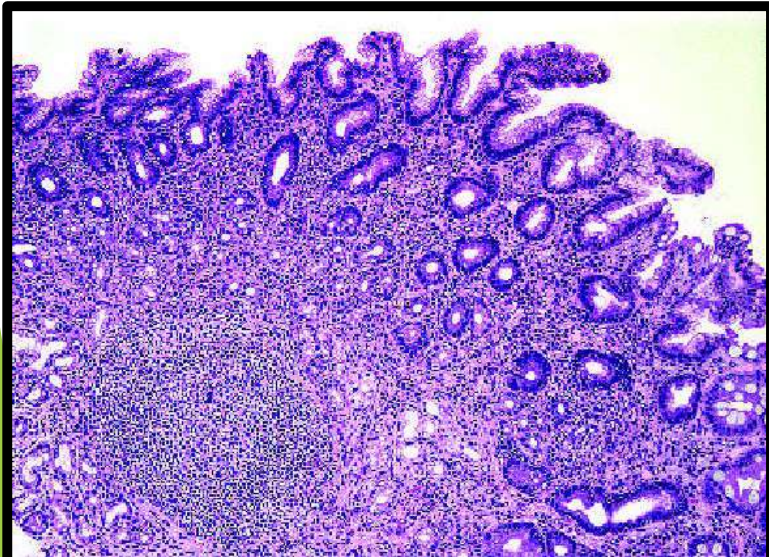
definition, examples:

Hashimoto thyroiditis, Helicobacter pylori gastritis

H pylori leads to acute and chronic gastritis when prolonged chronic gastritis it leads to tertiary lymphoid organ "accumulation of lymphocytes in lamina propria (reactive germinal center)" they may secrete lymphomas



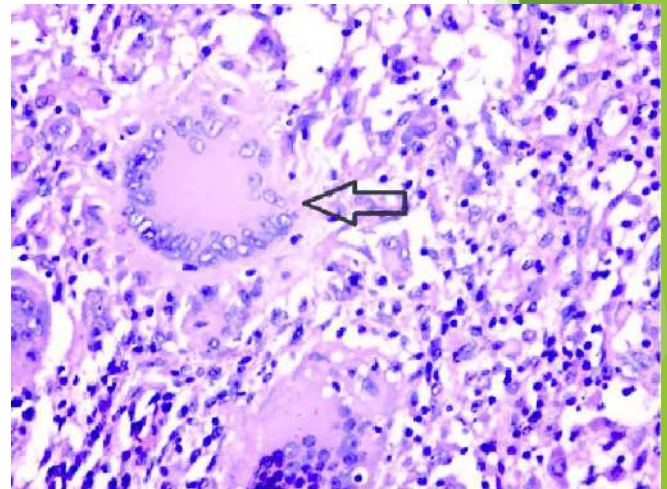
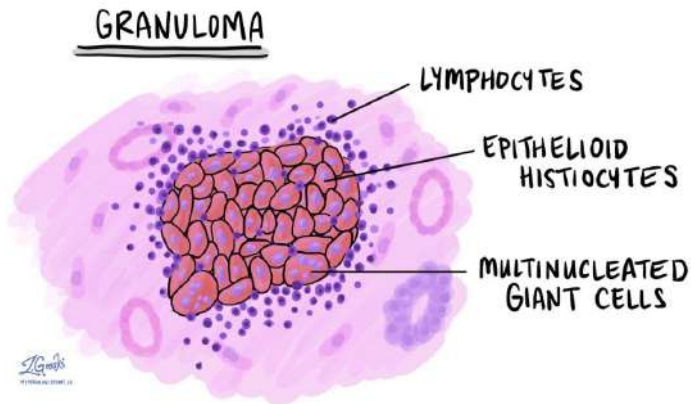
Thyroid in
Hashimoto thyroiditis



Helicobacter pylori gastritis

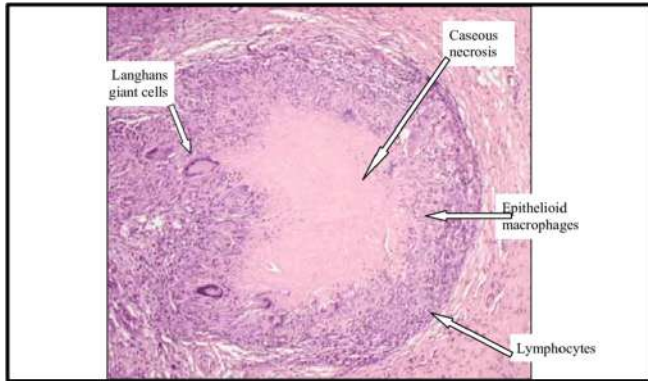
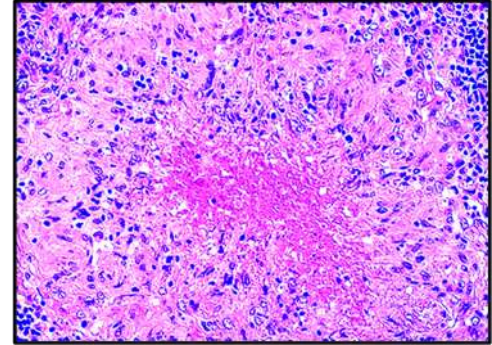
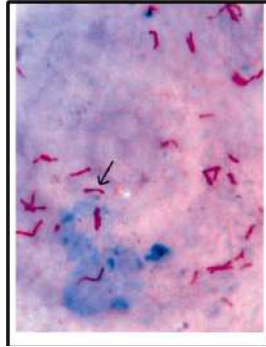
Granulomatous Inflammation

- ▶ Granulomatous inflammation is a form of chronic inflammation characterized by collections of activated macrophages, often with T lymphocytes.
- ▶ Granuloma formation is a cellular attempt to contain an offending agent that is difficult to eradicate



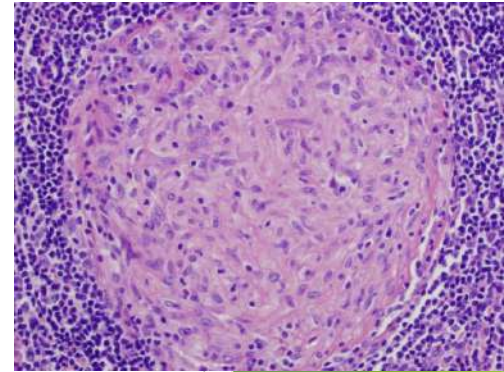
Granuloma formation is a cellular attempt to contain an offending agent that is difficult to eradicate

- by chronic inflammation only
- when causes necrosis inside granuloma u should think of TB type of bacteria is acid fast bacillus



Langhans giant cells are multinucleated giant cells in TB

Types of granulomas;

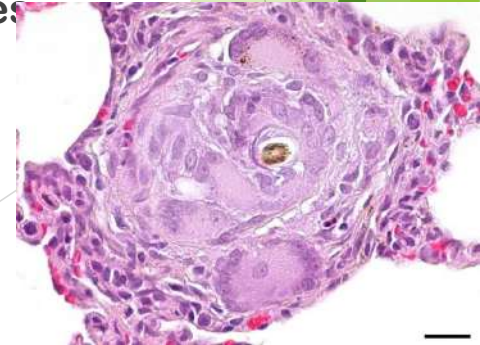


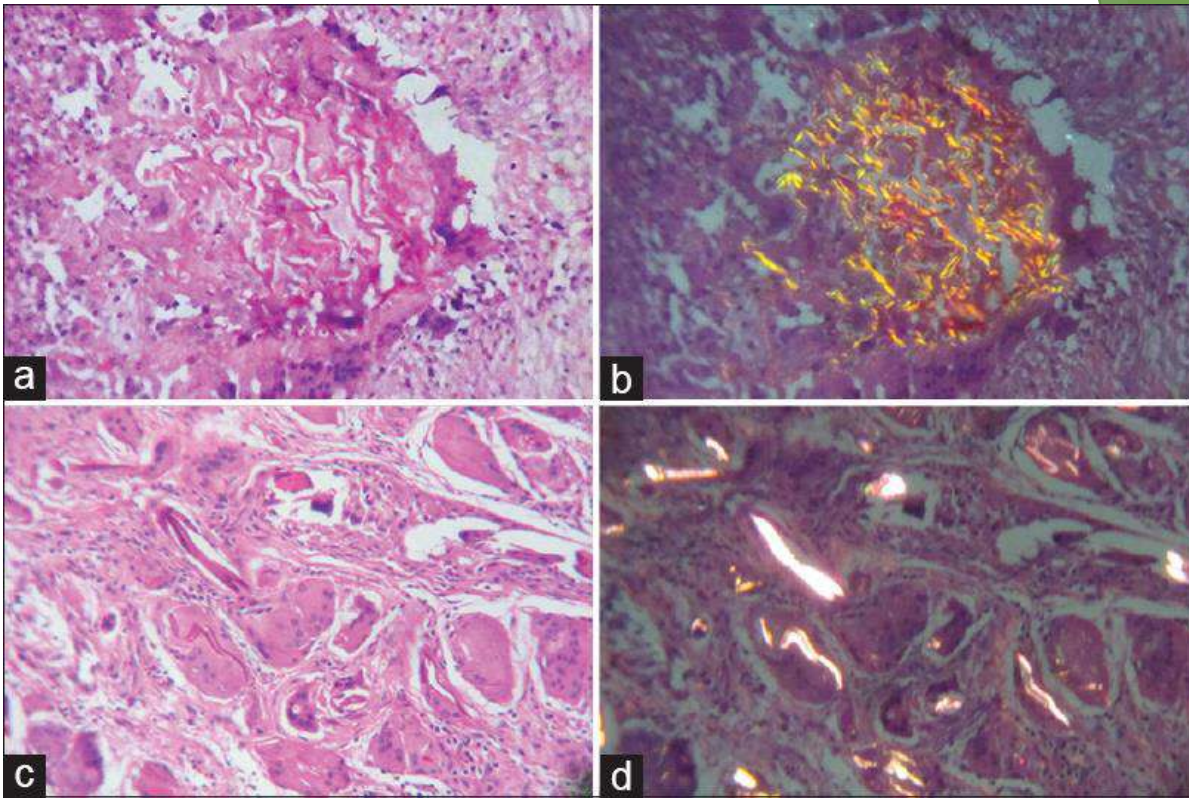
▶ **1. Immune granulomas:**

- ▶ caused by persistent T cell–mediated immune response.
- ▶ when the inciting agent cannot be readily eliminated.

▶ **2. Foreign body granulomas:**

- ▶ seen in response to inert foreign bodies, in the absence of T cell– mediated immune responses
- ▶ May form around materials such as talc (associated with intravenous drug abuse), sutures, or other fibers

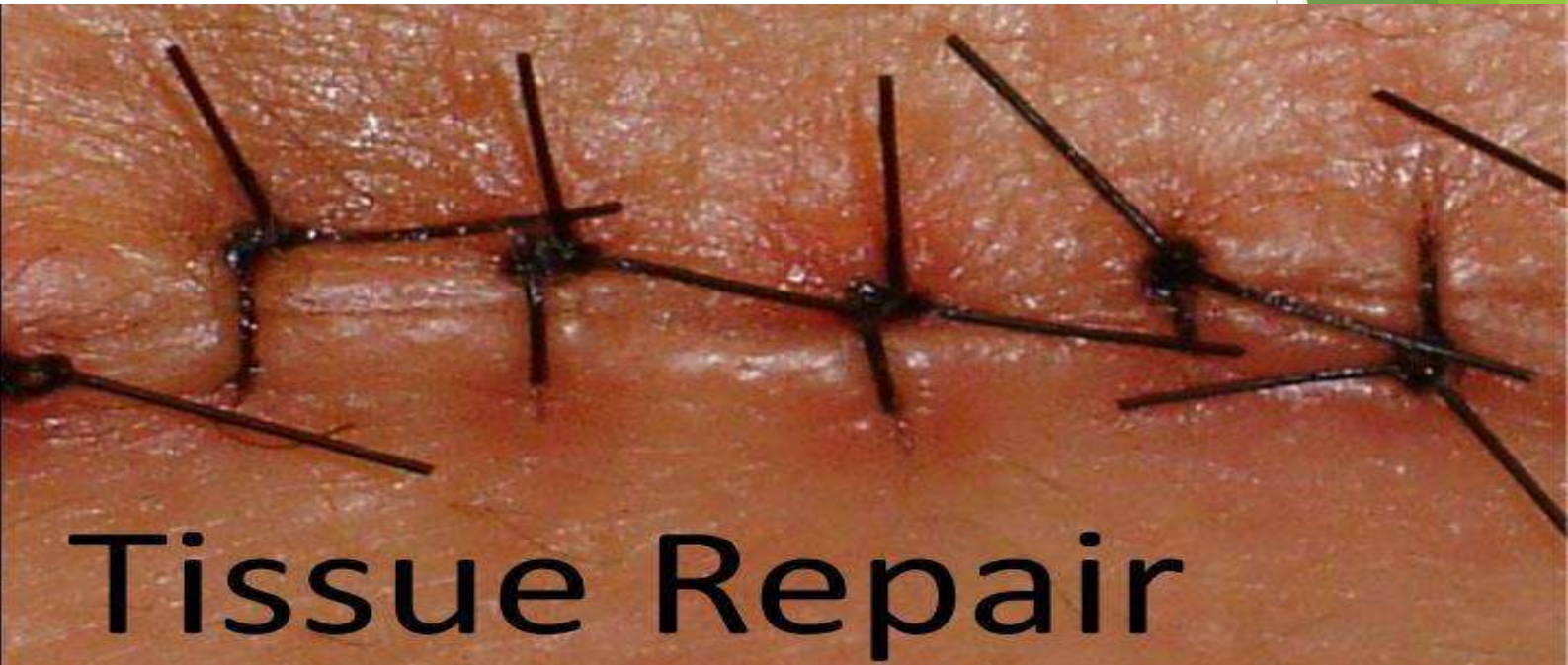




The foreign material can usually be identified in the center of the granuloma, particularly if viewed with polarized light, in which it may appear refractile.

TISSUE REPAIR 1

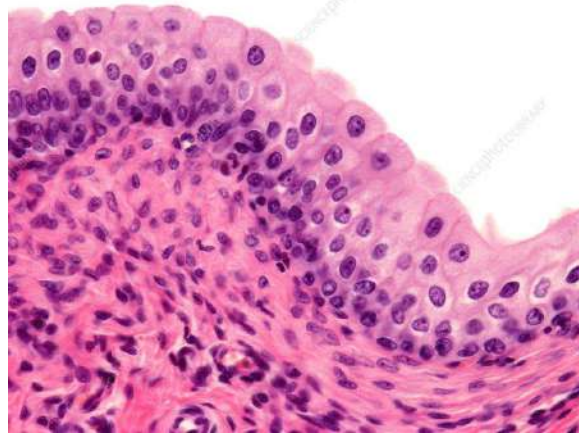
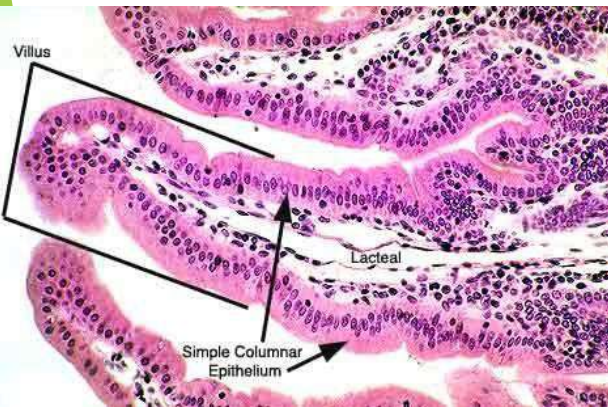
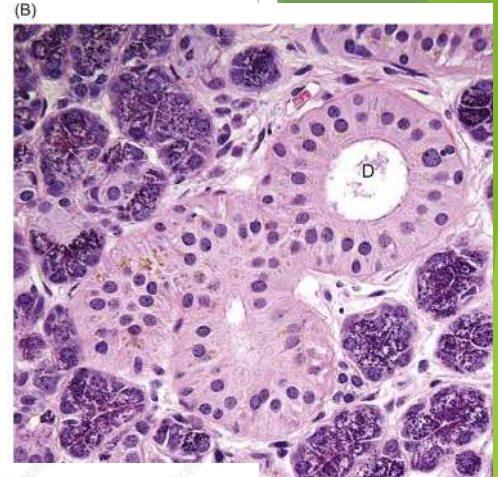
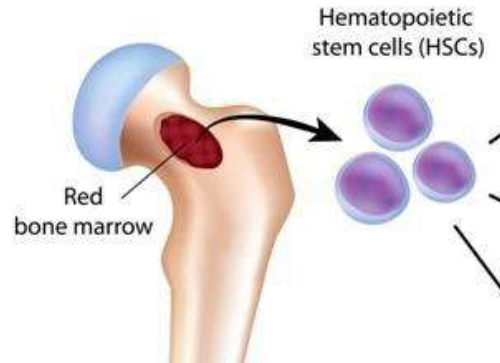
- ▶ The ability of tissues to repair themselves is determined, in part, by their intrinsic proliferative capacity.



Tissue Repair

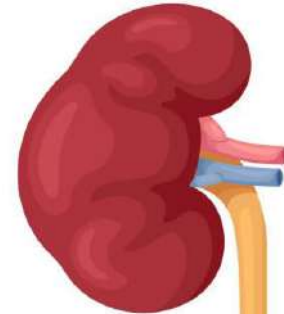
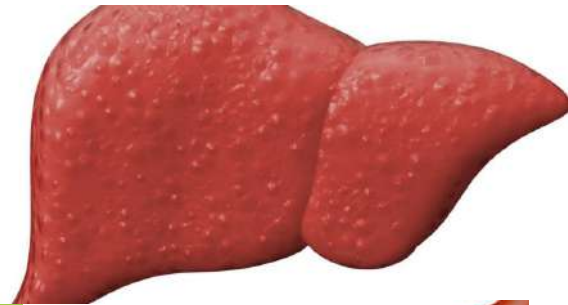
➤ 1. labile tissues

cells are constantly being lost and must be continually replaced by new cells that are derived from tissue stem cells and rapidly proliferating immature progenitors.

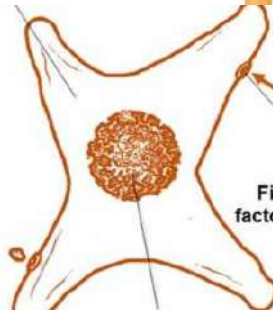
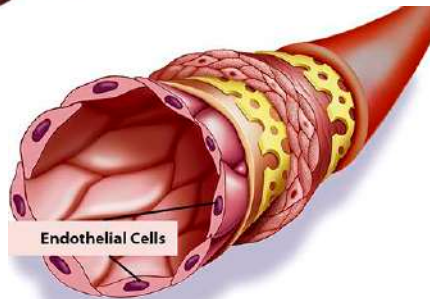


▶ 2. stable tissues

- ▶ are made up of cells that are normally in the G₀ stage of the cell cycle and hence not proliferating, but they are capable of dividing in response to injury or loss of tissue mass.

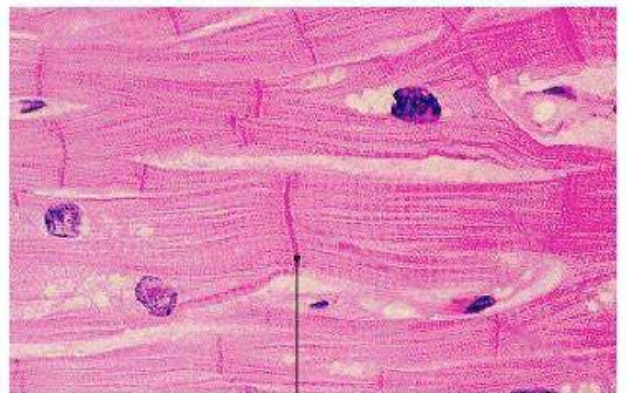


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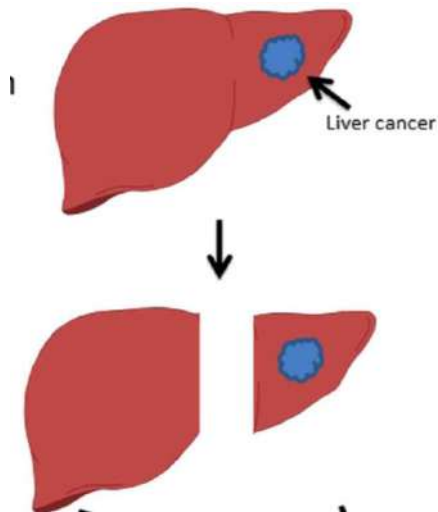


➤ 3. permanent tissues

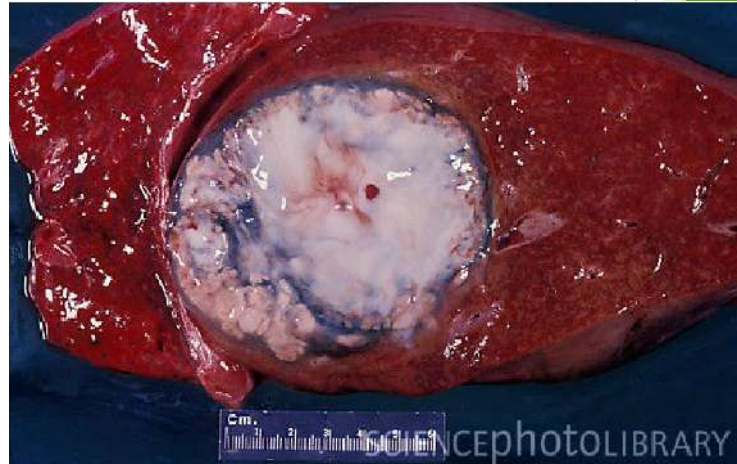
- ▶ consist of terminally differentiated nonproliferative cells, such as the majority of neurons and cardiac muscle cells.
- ▶ Injury to these tissues is irreversible and results in a scar, because the cells cannot regenerate.



- ▶ Restoration of normal tissue architecture can occur only if the residual tissue is structurally intact.
- ▶ if the entire tissue is damaged, regeneration is incomplete and is accompanied by scarring.



partial surgical resection



liver abscess

- ▶ The term scar is most used in connection to wound healing in the skin.
- ▶ Replacement of parenchymal cells in any tissue by collagen, as in the heart after myocardial infarction.



Tissue repair 2.

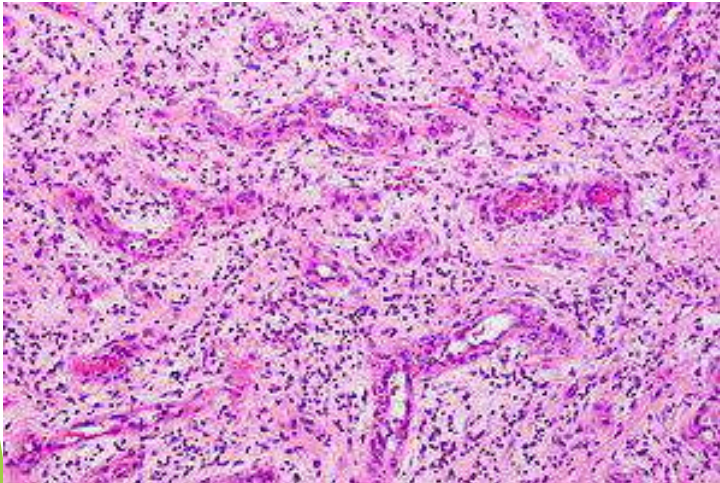
Sura Al Rawabdeh

14-Nov-2022



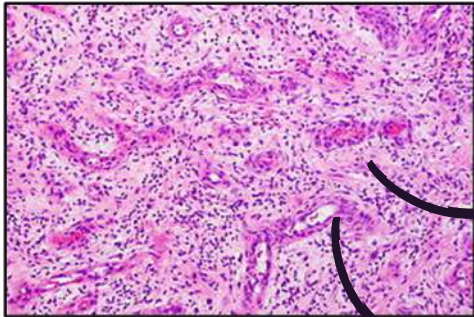
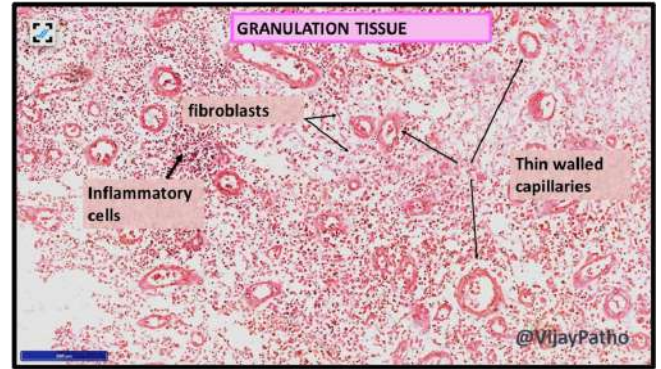
Granulation tissue.

Pink, soft, granular gross appearance, such as that seen beneath the scab of a skin wound.



Proliferating fibroblasts, loose connective tissue, new blood vessels and scattered chronic inflammatory cells

granulation tissue associate with prolong
chronic inflammation



inflammatory
cells and
fibroblasts in
between BV

increase BV in granulation
tissue



Arterial ulcers:
develop in individuals with
atherosclerosis of
peripheral arteries, especially
associated with
diabetes.



Venous leg ulcers:
seen in chronic venous hypertension,
which may be caused
by severe varicose veins or
congestive heart failure

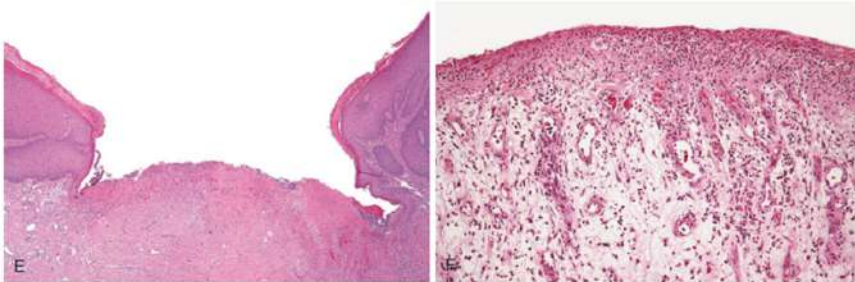


Pressure sores:
caused by prolonged
compression of
tissues against a bone,
for example, in bedridden

DIABETIC ULCERS



caused by:
small vessel disease causing ischemia,
neuropathy, systemic metabolic
abnormalities, and secondary infections



epithelial ulceration and extensive
granulation tissue in the underlying
dermis

WOUND RUPTURE (DEHISCENCE)

when increased intra abdominal pressure patient after surgery may have "dilation of colon or small bowel" so wide distance between margins

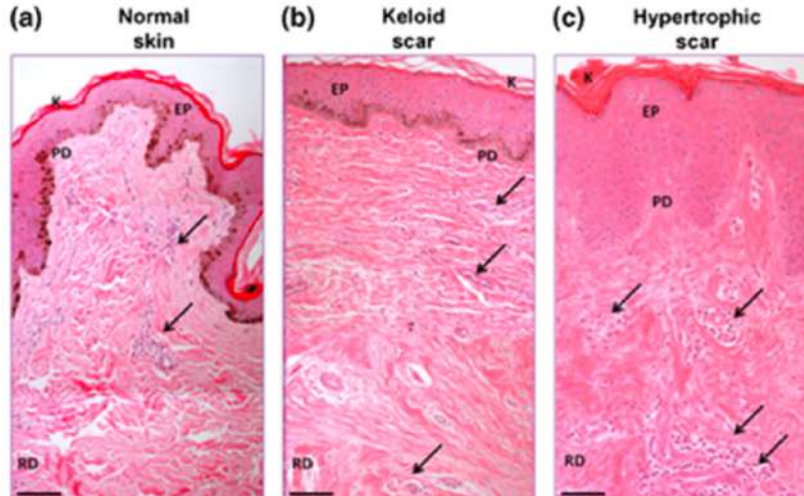
when chronic cough like whooping cough or ileus (painful obstruction of the ileum or other part of intestine)



**HYPERTROPHIC
SCAR**

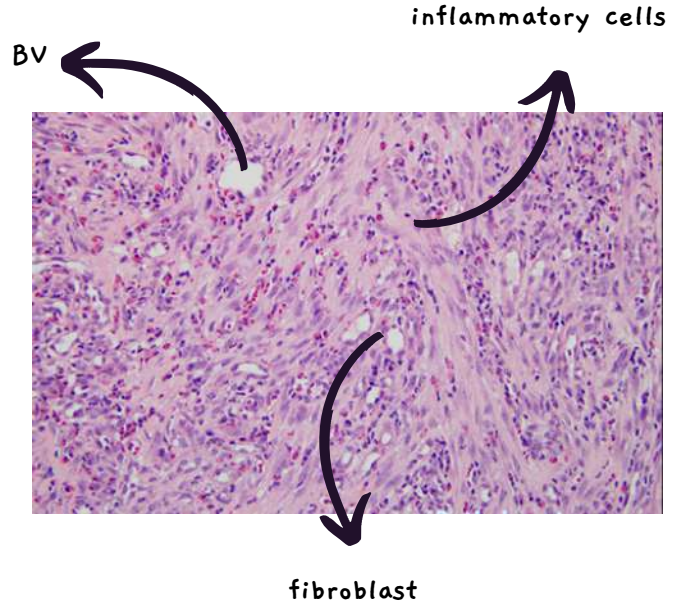
KELOID

growth outside the boundaries



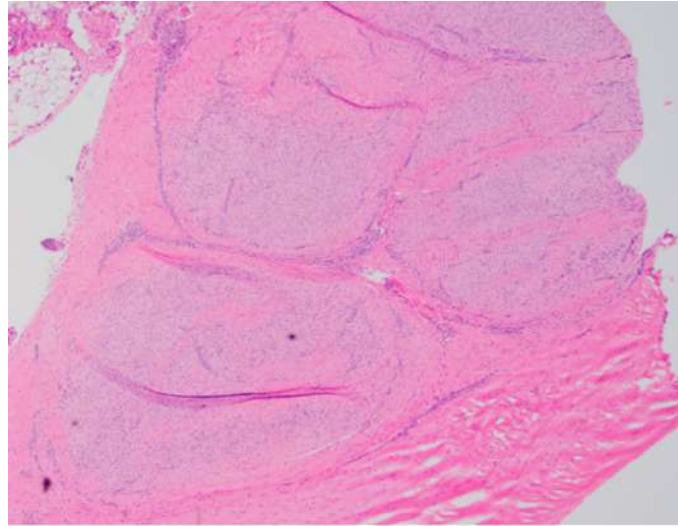
- A. In normal skin, the characteristic random orientation and bundle formation of collagen fibres
- B. increased number of thick collagen fibres arranged in bundles
- C. The collagen fibres were arranged randomly and showed highly cellular zones

EXUBERANT GRANULATION



CONTRACTION

high fibrous tissue for when sever burns

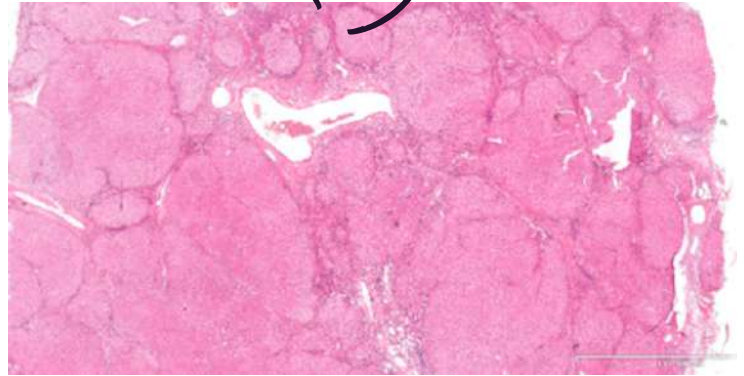


LIVER CIRRHOSIS

fibrous tissue ← nodule

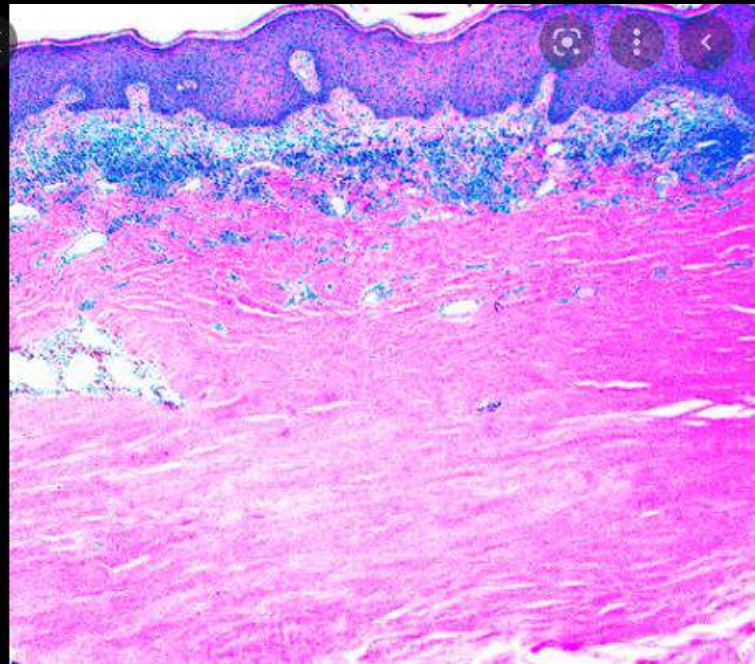


Diffuse nodulation of liver
due to fibrous bands
subdividing liver into
regenerative nodules
rich in fibers

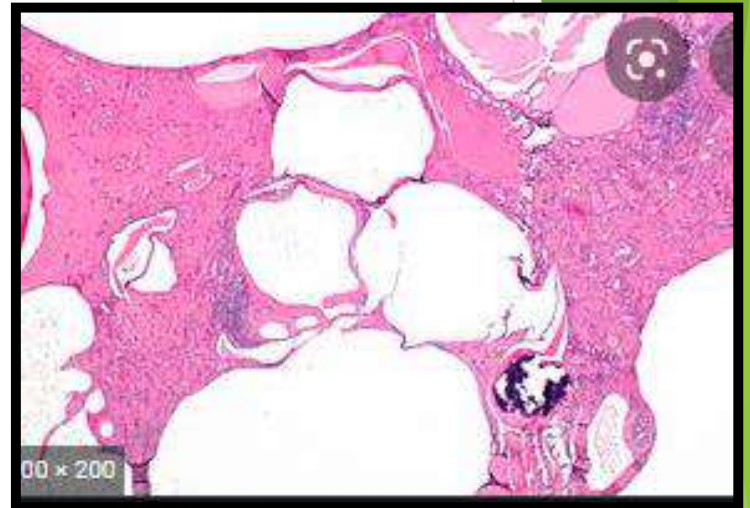


diffuse disruption in architecture of
the liver with
bridging fibrous septa and
parenchymal nodules
formation.

2.systemic sclerosis (scleroderma).

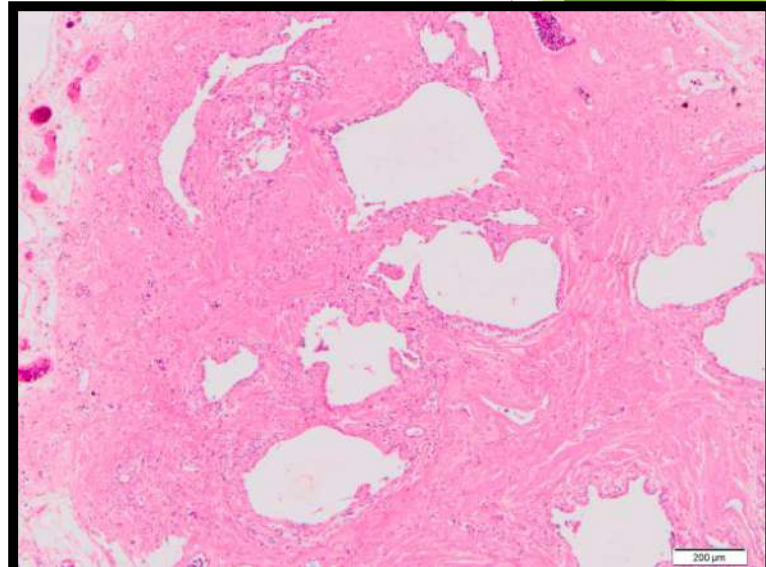
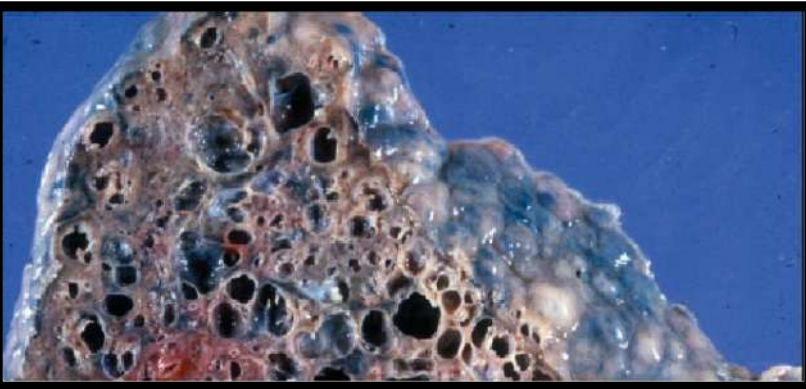


3. End-stage kidney disease.



❖ fibrosing diseases of the lung.

Grossly: Honeycomb, Cystic spaces with fibrotic wall
Histology: cystic spaces lined by bronchiolar epithelium and fibrotic wall



كلّ طريق تطلبه في حياتك خالصاً لوجه الله

فأجرك باقٍ فيه وإن لم تحقق منه هدفاً!

أ. حسين عبد الرزاق

