EDEMA, HYPEREMIA, CONGESTION

(MCQs, short note)

Edema – accumulation of fluid in tissues.

Effusion – accumulation of fluid in body cavities.

1. ↑ hydrostatic pr.
   - DVT
   - CHF
2. ↓ plasma oncotic pr.
   - Liver disease
   - Protein malnutrition
   - Nephrotic syndrom
3. Lymphatic obstruction
   - Tumors
   - Infection
   - Trauma
   - Fibrosis
4. Inflammation
   - Acute
   - Chronic

Edema and Effusion

- Inflammation → Exudate → protein rich
- Non inflammatory → Transudate → protein poor

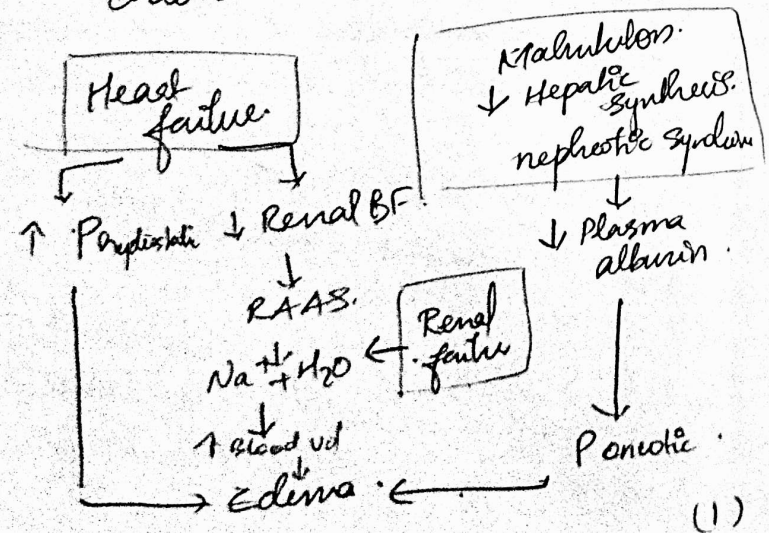
Edema
- → Subcutaneous
- → pericardial
- → pulmonary

Effusion
- → Pleural
- → pericardial
- → Ascites

Hyperemia & congestion
Increased blood volume within tissues.

- Hyperemia → localized ↑ in vol. of blood.
  - → Arterial and arteriolar dilatation
  - → active process
- Congestion → localized ↑ in vol. of blood.
  - → Impaired venous drainage
  - → passive process.

Hyperemia
Sympathetic neurogenic mech: or release of vasoactive substances.
Seen in – Inflammation, exercise, fever, blush.
Because of arteriolar dilation.
Affected tissue is red
Because of oxygenated blood.



congestion.

→ May be systemic due to cardiac failure or local due to venous obstruction (varicose veins).

→ Dilation of veins and capillaries due to impaired venous drainage results in passive venous congestion

Tissue has red-blue colour.

Long standing congestion
↓
chronic venous congestion
↓
stasis of poorly oxygenated blood
↓
chronic hypoxia
↓
→ parenchymal degeneration
→ foci of haemorrhage.
→ clusters of haemosiderin laden macrophages.

Morphology.

CVC Lung.

→ occurs in left heart failure
→ schematic mitral stenosis, ischemic heart disease.

Pulmonary changes.

1. Perivascular & interstitial transudate in interlobular septa
2. Progressive edematous thickening of alveolar septae.
3. Accumulation of edema fluid in alveolar spaces.
4. Iron from edema fluid & Hb from RBCs.

phagocytosed by macrophages converted to hemosiderin.

Hemosiderin macrophages abundant in alveolar lumen → Heart failure cells.

• In long standing cases (mitral stenosis).

→ Brown induration in lungs,
→ fibrosis.

Gross: heavy, rusty brown coloured, firm due to fibrosis brown induration of lung

Microscopy:

→ congested capillaries in alveolar septa
→ thickened alveolar septa due to ↑ fibrous connective tissue.
→ fluid containing hemosiderin laden macrophages → heart failure cells.

CVC liver

gross → enlarged, tender with tense capsule.

C/S - Nutmeg appearance due to red & yellow mottled appearance corresponding to congested centre of

lobules & fatty change.

Microscopy:
(draw normal & abnormal)
→ central vein dilated & congested
→ central hemorrhagic necrosis
→ fatty changes in periphery

→ central hepatocyte degeneration
centrilobular necrosis loss of hepatocytes, hemorrhage, hemosiderin laden macrophages.

peripherally - fatty change.
(periportal hepatocytes better oxygenated).

→ centrilobular necrosis in long standing cases - centrilobular fibrosis & regeneration of hepatocytes
(cardiac cirrhosis).

& liver cirrhosis & cardiac cirrhosis can show regenerative nodules (homogenous, eosinophilic.

CVC spleen
→ chronic venous congestion - splenic enlargement / congestive splenomegaly
→ systemic congestion - in cardiac →

Organ
enlargement, firm with thickened & fibrous capsule.
C/S - meaty - grey / red in colour.

Kidney
Red pulp → congested from beneath fibrosis.
↑ portal venous pressure
↳ deposition of collagen in basement membrane of sinusoids dilated → slowing of blood flow → prolonged exposure of blood cells to cord having phages -

* Gama gandy bodies
fibrosis + iron + calcium salts deposited in CT & elastic fibres.

Questions
Heart failure cells.
nutmeg appearance
Gama gandy bodies.
transudate & exudate.