Odema

Definition : abnormal & excessive accumulation of "free fluid" in the interstitial tissue spaces & serous cavities.

Ex: Ascites
Pleural effusion
Hydropericardium

Free fluid
- Body cavity
- interstitial space

Types :

a) Localised – lymphatic odema
b) Generalised – renal odema
] LOCATION

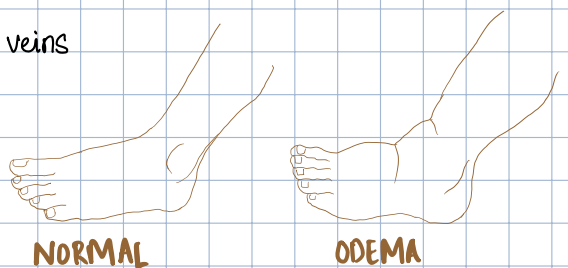
a) Transudate – filtrate of blood plasma without changes in endothelial permeability
b) Exudate – odema of inflammed tissue associated with increased vascular permeability.
] FLUID COMPOSITION.

Pathogenesis :

1. **Decreased plasma Oncotic Pressure**
   ↓ed plasma protein → outward movement of fluid from capillary wall → interstitial odema
   Ex: renal odema – nephrotic syndrome, Acute GN.
   ascites – cirrhosis of liver.
   hypoproteinaemia.

2. **Increased capillary hydrostatic pressure**
   >12mmHg → no reabsorption of fluid → odema
   Ex: Cardiac odema
   Ascites
   Passive congestion – thrombosis, varicose veins

3. **Lymphatic Obstruction**
   - removal of lymph nodes
   - filariasis
   - lymphoma
   - Milroy's disease



4. **Tissue factors :**
   - 2 forces in interstitial space [oncotic pressure – increased → ↑ed vascular permeability
     tissue tension – decreased → loose subcutaneous tissue of eyelids & ext. genitalia

5. **Increased Capillary permeability.**

- injured endothelium → gaps → leakage of plasma proteins → interstitial fluid → reduced oncotic pressure → odema.

Ex: Generalised - poison, drugs, anoxia

Localised - inflammatory odema - infections, allergic reactions, insect bite.

6. **Sodium and Water Retention.**

Na → absorbed → PCT → kidney.

Intrinsic renal mechanism - hypovolaemia → baroreceptors in carotid sinus → vasomotor center → renal ischaemia → ↓ GFR → ↓ Na in urine → retention of Na.

Extrinsic renal mechanism - Aldosterone - renin-angiotensin mechanism.

↳ increases reabsorption of sodium → ↑ in blood pressure.

ADH Mechanism - ↑ ADH → highly concentrated urine.

Ex:- cardiac Odema - congestive cardiac failure

ascites of liver disease

nephrotic syndrome, acute glomerulonephritis.

Difference between Transudate and Exudate Odema.

	Feature	Transudate	Exudate
1.	*Definition*	Filtrate of blood plasma without changes in endothelial permeability	Oedema of inflamed tissue associated with increased vascular permeability
2.	*Character*	Non-inflammatory oedema	Inflammatory oedema
3.	*Protein content*	Low (less than 1 gm/dl); mainly albumin, low fibrinogen; hence no tendency to coagulate	High (2.5-3.5 gm/dl), readily coagulates due to high content of fibrinogen and other coagulation factors
4.	*Glucose content*	Same as in plasma	Low (less than 60 mg/dl)
5.	*Specific gravity*	Low (less than 1.015)	High (more than 1.018)
6.	*pH*	> 7.3	< 7.3
7.	*LDH*	Low	High
8.	*Effusion LDH/ Serum LDH ratio*	< 0.6	> 0.6
9.	*Cells*	Few cells, mainly mesothelial cells and cellular debris	Many cells, inflammatory as well as parenchymal
10.	*Examples*	Oedema in congestive cardiac failure	Purulent exudate such as pus