

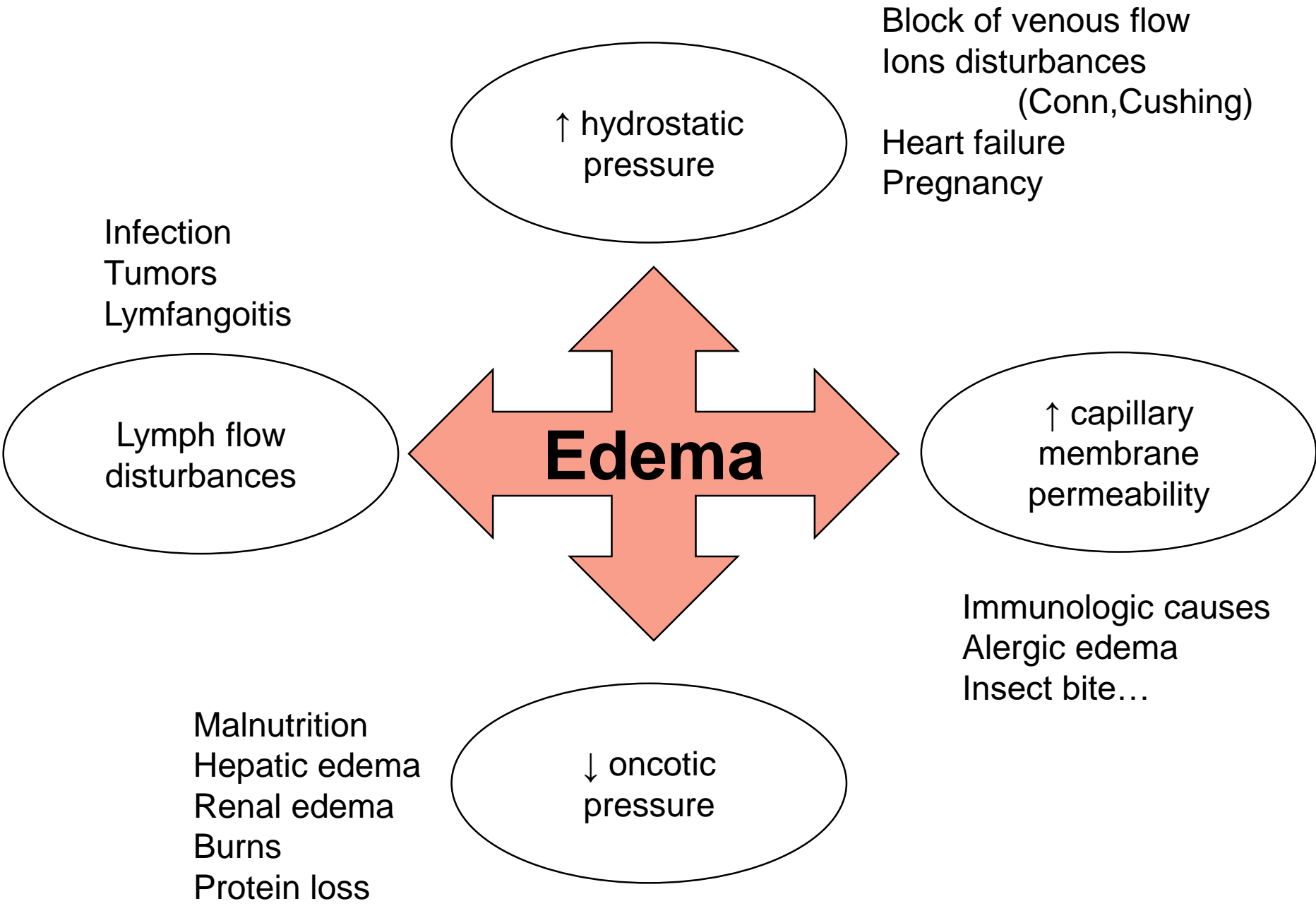
Diferencial diagnosis of limb edema

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Limb edema

- Very often reason for visiting GP
- Excessive accumulation of fluid in interstitial space, i.e. extracellular and extracapillary
- Clinical presentation: visible and palpable effusion of skin
- Physiology: Starling's hypothesis - there must be a balance between the hydrostatic pressure of the blood in the capillaries and the osmotic attraction of the blood for the surrounding fluids





Edema /swelling

- **Generalized** = symmetrical
- Water and salt retention
- Increased permeability of capillary membrane

- **Local** = asymmetrical
 - Disturbances in Starling's equation
 - obstruction, compression, venous or lymphatic insufficiency, inflammatory or allergic swelling

Diagnositics

- **History** – varicous veins, venous crural ulcerations, medication, family history
- **Clinical presentation**
- **Lab** – total plasma protein, CRP, pro-BNP
- **Duplex vascular ultrasound**
- Digital photoplethysmography
- CT, MR, echoKG, chest X-ray...

Physical examination

Calf circumference !!!

Stemmer's sign – a thickened fold of skin at the base of the second toe that can be lifted - *positive test result = skin cannot be lifted*

„Pitting“ test – finger is pressed against the swollen tissue. If this leaves an indentation on the swollen area – *positive test result*

Edema

Symmetrical

Heart

Kidney

Hypoproteinemia

Drugs

Endokrine disease

Asymmetrical

Deep venous trombosis

Flebedema

Lymfedema

Muscle-pump inactivity

inflammation

Venous compression

Edema

Symmetrical

Heart

Kidney

Hypoproteinemia

Drugs

Endocrine disease

- In chronic heart failure
- Perimaleolar location
- Towards late afternoon\evening
- Stretched, glossy, pasty skin, finger pressure causes indentation
- Location in accordance with body position
- vertically x horisontally
- weakness, fatigue, dyspnoe....

Edema

Symmetrical

Heart

Kidney

Hypoproteinemia

Drugs

Endocrine disease

Angioneurotic edema, defect of C1 proteinu inhibitor

○ Hypoproteinemia

- Decreased plasma protein
- malabsorbtion, malnutrition
- Protein loss - burns, exsudative enteropaties

○ Liver

- Decreased albumin production
- + salt + water retention

○ Kidney – nephrotic sy, ac.glomerulonefritis..

- Increased albumin leakage in urine+ salt+water retention
- Perimaleolar, palpebral – soft, thin tissue, mostly in the morning

Generalized (symmetrical) edema

○ **Dependent**

- Frequent, benign
- Occur after long standing or sitting, during hot weather
- Typical for long journeys, limited mobility – osteoarthritis („geriatric edema“), hemiparesis...
- Wanes after limb elevation

○ **Cyclical idiopathic edema**

- Cyclical occurrence, independently on periods
- Frequently other complaints (headache, discomfort, psychological problems, oliguria, constipation)
- Lag time without edema could change with times where edema is present or persistent edema

○ **Drug-dependent edema**

- NSAID, corticosteroids, Calcium channel blockers, progesterone, pioglitazone
- Paradoxical in abuse of diuretics, laxatives and diuretic herbal infusions. Decrease in intra- and extravascular volume, which causes activation of aldosterone-angiotensin system and increased retention of water and salt

Local (asymmetrical) edema

- Deep vein thrombosis
- Chronic venous insufficiency
- Lymphedema
- Lipedema
- Inflammatory edema
- Allergic edema

Local (asymmetrical) edema

- **Deep venous thrombosis**
- Sudden occurrence
- Stretched, warm skin
- Painful palpation, „full calf“
- Positive Homan's sign
- Warning „Pratt's veins“
- DUS subfascial swelling

Localised (asymmetrical) edema

- **Chronic venous insufficiency**

- **A/ flebedema**

- **Valve disturbances, insufficient function of muscle pump,**
external compression of veins (Baker's cyst!!)
- Gradual onset, perimaleolar firstly
- Soft swelling, pitting test – the indentation vanishes quickly
- Pain, feeling of weight, cramps
- Complaints extension **during evenings and night, after long standing, during warm days, before periode, taking anti-baby pills, in pregnancy**
- Stemmer's sign negative
- Trophical changes could develop

- B/ flebolymphedema**

- Chronic venous insufficiency with disturbances of lymphatic system
- Irreversible swelling
- with high protein content
- Stemmer's sign positive
- Doesn't wane after limb elevation

Local (asymmetrical) edema

Lymphedema

- debilitating progressive condition with no known cure
- dysfunction of lymphatic system, an abnormal accumulation of interstitial fluid containing high molecular weight proteins
- obstruction, dilation of valves, valvular insufficiency in lymphatic veins or subsequent reversal of lymphatic flow
- edema with high content of protein; tough, painless edema
- pale, cold skin
- pitting test absent, Stemmer's sign positive
- edema doesn't wane in elevated limbs

Local (asymmetrical) edema

Lymphedema

- A/ primary – inherited
 - Inefficient building up of lymphatic veins or nodes
 - One or both limbs are affected
 - Praecox – clinical presentation before 35years of age
 - Tardum – after 35years of age
- B/ secondary
 - Acquired obstruction of lymphatic veins or nodes
 - Tumors, injury, inflammation (erysipelas), surgery, radiation therapy

Local (asymmetrical) edema

- **Lipedema**

- Pathological accumulation of fat tissue that accumulates fluid – „aspic“ consistence
- Edema not present at the tarsal area
- Typical in ankle/knee area
- Stemmer´s sign absent
- Painful palpation, typically in women

- **Inflammatory edema**

- Dolor, calor, rubor, functio laesa...
- Erysipelas, phlegmon, furuncle...

- **Allergic edema**

- Insect bite
- Contact allergy

Increased permeability of capillary membrane

Differential diagnosis of limb edema

ACUTE EDEMA

Unilateral

- Deep venous thrombosis
- Bacterial inflammation
- Injury
- After surgery
- osteoarthritis

Bilateral

- Generalized edema (cardiac, kidney, liver, hypoproteinemic..)
- Both-sided deep veins thrombosis
- Thrombosis of inferior vena cava
- Idiopathic cyclical edema

Differential diagnosis of limb edema

CHRONIC EDEMA

Unilateral

- Chronic venous insufficiency
- Lymphedema
- Angiodysplasia

Bilateral

- Generalized edema (cardiac, renal, liver, hypoproteinemic..)
- Dependent – very frequent, limited mobility – osteoarthritis, muscle pump inefficiency, long sitting, standing, hemiparesis..
- Lipedema
- Drug-induced edema

Limb edema therapy

- **Causal treatment**

- Heart, liver, kidney, plasma protein level....

- **Drug therapy**

- Capillary membrane stabilisation- diminishes leakage of fluid into interstitial tissue(diosmin, hesperidin, troxerutin)

- Enzymes

- **Compression therapy**

- Graduated pressure bandage – short traction

- Compression garments

- **Surgery**

Limb edema therapy

- **Lymphatic massage**

- manual lymphatic drainage – recovers pump function of lymphatic capillaries
- Intermittent pneumatic pump compression
- **Not possible to use:**
 - malignancies, heart failure, acute bacterial infection, acute deep vein thrombosis, thrombophlebitis
 - Very carefully in accelerated hypertension, hypotension, hyperthyroidism

- **Very important! EDUCATION!**

- Limb elevation, reduction of long standing/sitting position
- Weight loss
- Appropriate shoes
- Muscle-pump training