

MUNI | SIMU
MED

Chest Pain

Lukáš Dadák

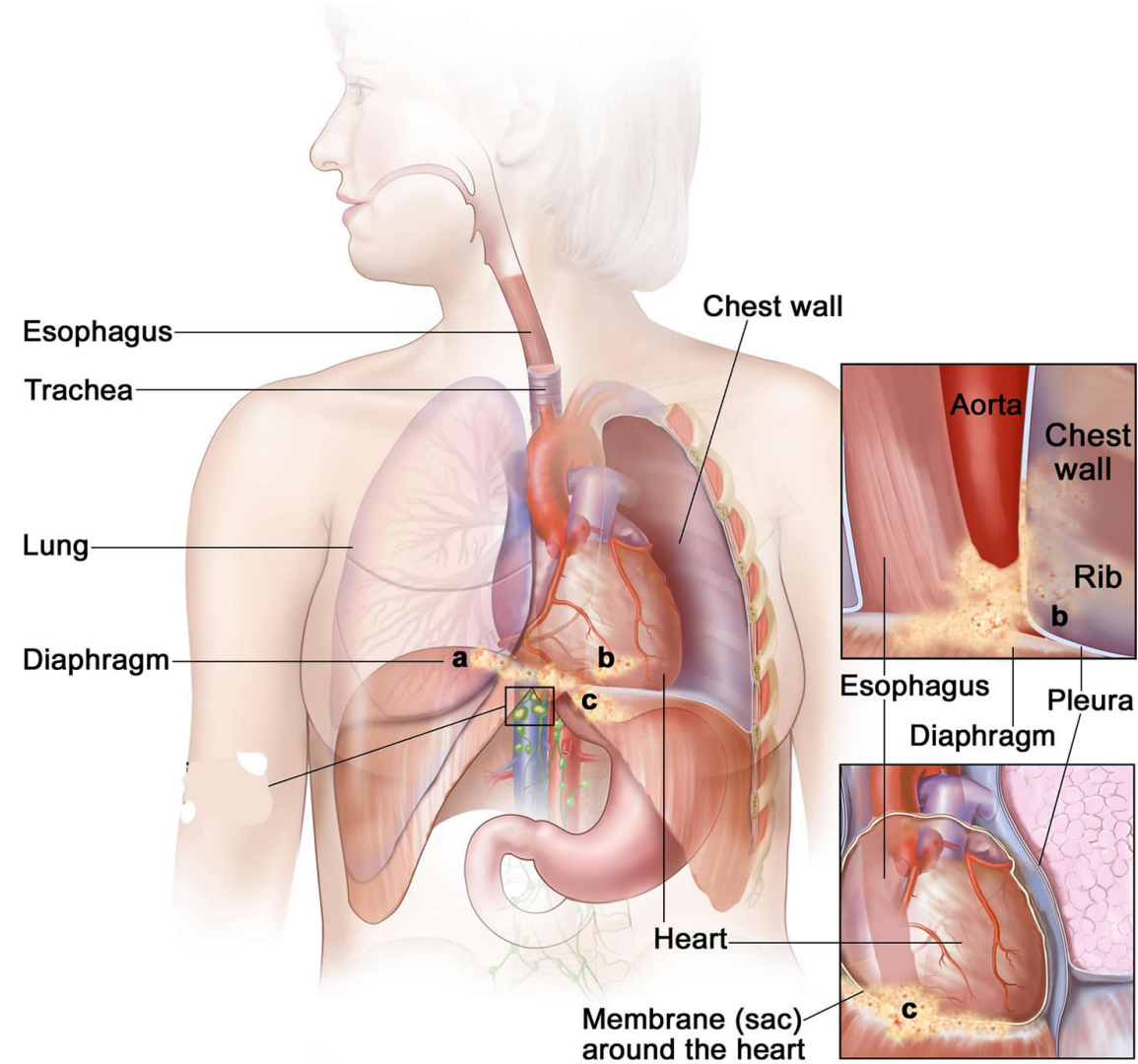
Learning objectives:

- Student will learn the most common causes of chest pain.
- Student will learn the differences between visceral and parietal pain.
- Student will learn the FA to a casualty with chest pain.

Anatomy of the Chest

- chest wall:
 - skin,
 - muscles,
 - bones, joints
 - parietal pleura

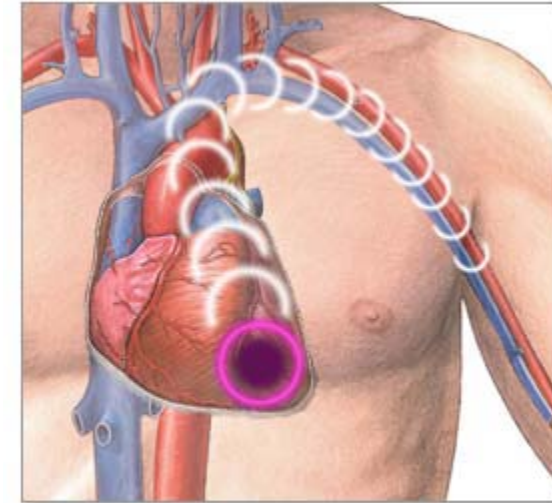
- organs:
 - heart, pericardium
 - (lung), visceral pleura
 - esophagus
 - aorta



<https://healthjade.com/what-is-pain-in-the-esophagus/>

Pain

- unpleasant sensation caused by illness or injury



Pain radiating
down arm
might signal
heart attack

ADAM.

<http://wakehealthse3.adam.com/content.aspx?productid=117&pid=1&qid=003079>

- ischemic heart disease
 - the most common cause of chest pain
 - 30% EMS

Shortness of Breath

- subjective feeling
- unpleasant breathing associated with a feeling of lack of air

- The patient becomes aware of increased breathing work.

Anatomy of the Chest

– chest wall:

- skin,
- muscles,
- bones, joints
- parietal pleura

– parietal pain

- precisely localizable
- sharp, cutting
- change in movement

– pointed by finger

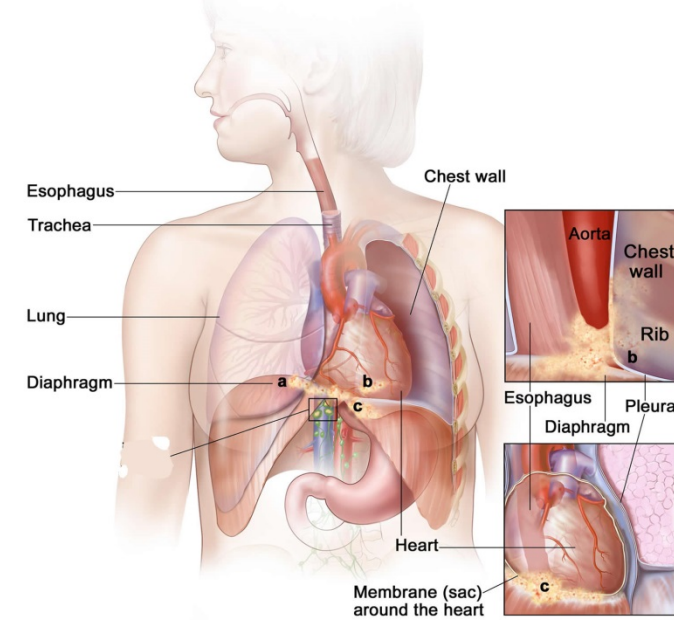
– organs:

- heart, pericardium
- (lung), visceral pleura
- esophagus
- aorta

– visceral pain

- diffuse, dull, vaguely defined,
- located in the middle line
- burning

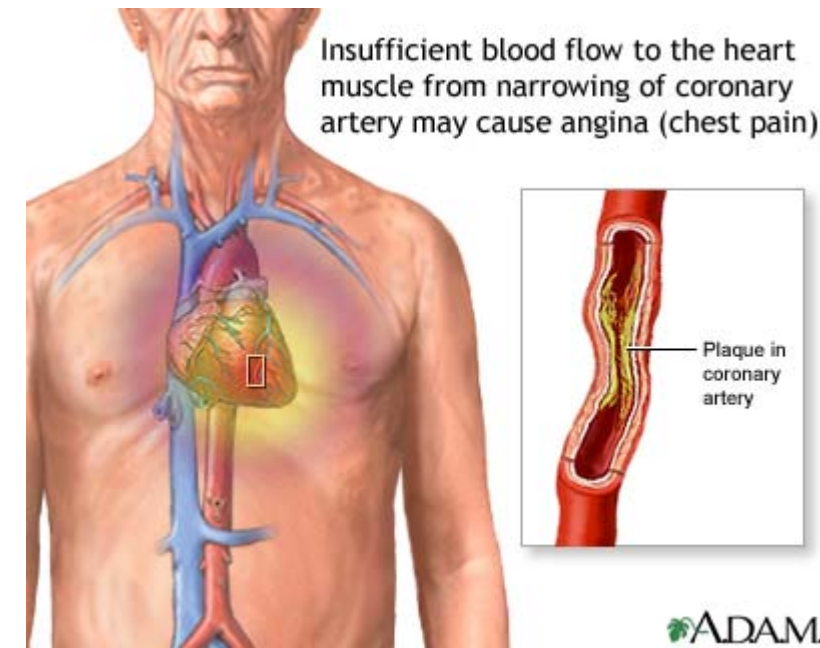
– pointed by fist / palm



Ischemic Heart Disease

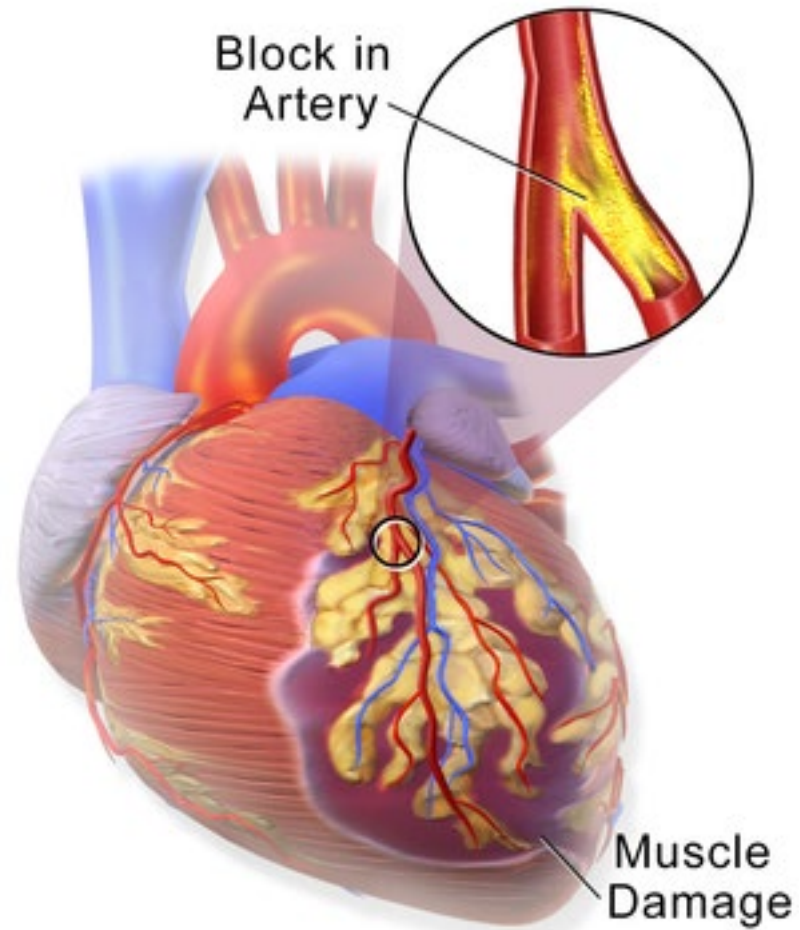
- coronary artery obstruction
- heart muscle insufficiently supplied with O_2 → dysfunction → death of cells

- predisposition:
 - obesity
 - smoking
 - stressful lifestyle
 - M after 45, F after menopause



<https://loyolamedicine.adam.com/content.aspx?productid=117&pid=1&gid=000198>

Artery occlusion



Heart Attack



https://en.wikipedia.org/wiki/Myocardial_infarction#/media/File:Heart_ant_wall_infarction.jpg

Manifestations of Ischemia

- conduction disturbance = rhythm disturbances
 - cardiac arrest
- contractility disorder
 - lung edema (shortness of breath)
 - cardiogenic shock (cold, pale or bluish skin, sweating,...)
- pain
 - behind the sternum / in front of the backbone
 - uncomfortable pressure / burning in the middle of the chest
 - radiate up the neck and into the jaw and teeth
 - radiate into the shoulder or down one or both arms

Manifestations of Ischemia

– angina pectoris

- pain during exertion / at rest, forces to stop - arterial spasm
- Medication: nitroglycerin – tbl/ spray **under the tongue** - dilation of blood vessels - improvement of blood circulation - relief of problems within minutes

– acute myocardial infarction

- visceral pain
- restlessness, anxiety and fear of death
- shortness of breath
- sweating, nausea, vomiting, shock
- slow / fast / irregular pulse

– sudden cardiac arrest - ventricular fibrillation, death

– mute ischemia

- dysfunction of heart, no pain (shortness of breath, cyanosis)

Occurrence of AMI

- household (70%)
- employment (10%)

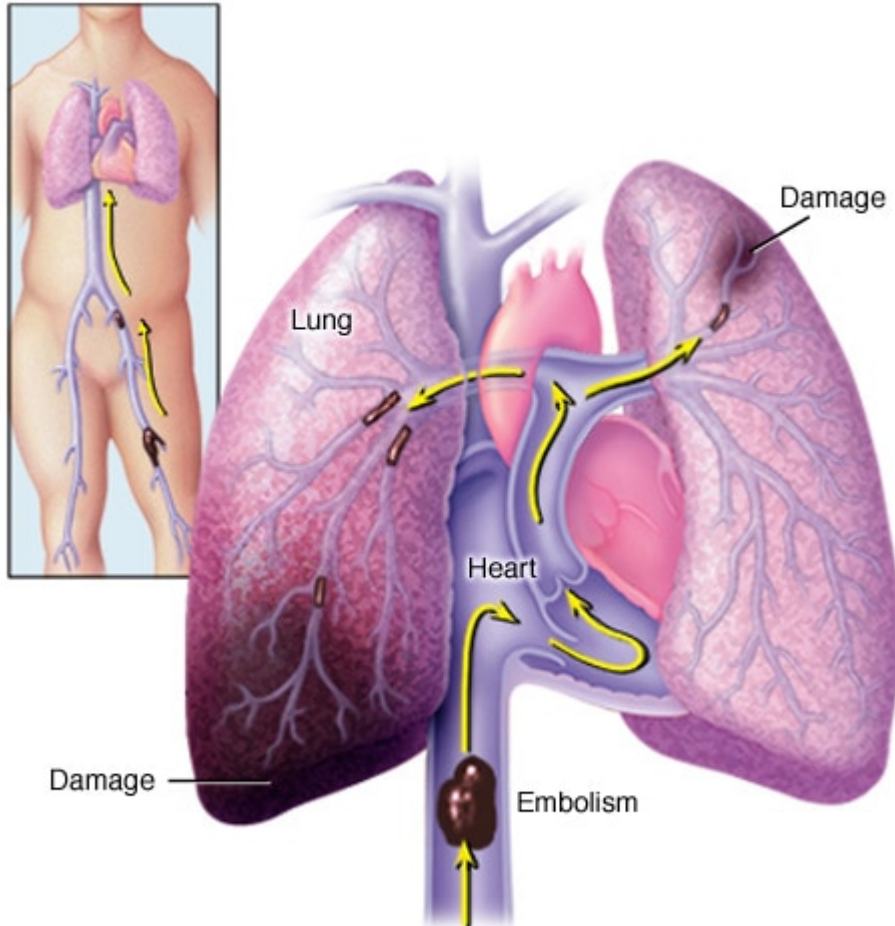
- rest (45%)
- sleep (17%)
- normal activity (30%)
- hard work (8%)

FA

- SSSABC
- make casualty comfortable (calm, no stress, no exercise)
- half sitting, loosen clothes to breathe better
- call EMS
- monitor vital signs (ABCD)
- do not eat / drink / smoke

- (Acylpyrin = Anopyrin = acetylsalicylic acid 100 mg p.os)
- Be ready to start BLS with AED immediately!

Pulmonary embolism



- embolus = a clot obstructing a lung artery
- signs and symptoms:
 - shortness of breath
 - chest pain
 - cough
 - (rapid or irregular heartbeat)
 - (dizziness)
 - (sweating, fever)
 - (leg pain or swelling)
 - (cyanosis)

Pulmonary embolism

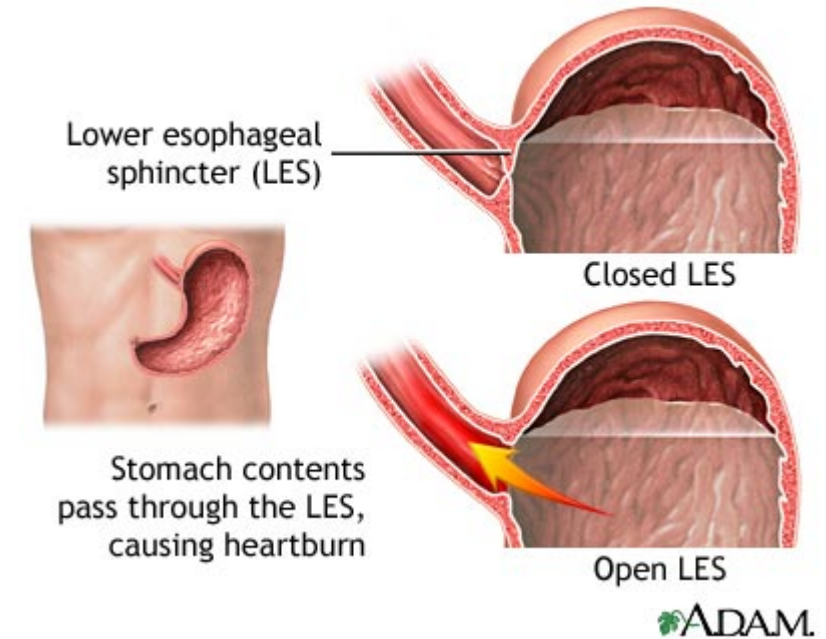
- shock

- FA:

- SSSABC
- sit and rest
- EMS

Gastroesophageal Reflux

- the acidic content of the stomach irritates the esophageal wall
- pain
 - forward bend, lying down
 - with an increase in intra-abdominal pressure
 - there may be temporary relief after a meal



<https://loyolamedicine.adam.com/content.aspx?productid=117&pid=1&gid=00265>

Back pain

- degenerative diseases of the spine
- related to movement, position

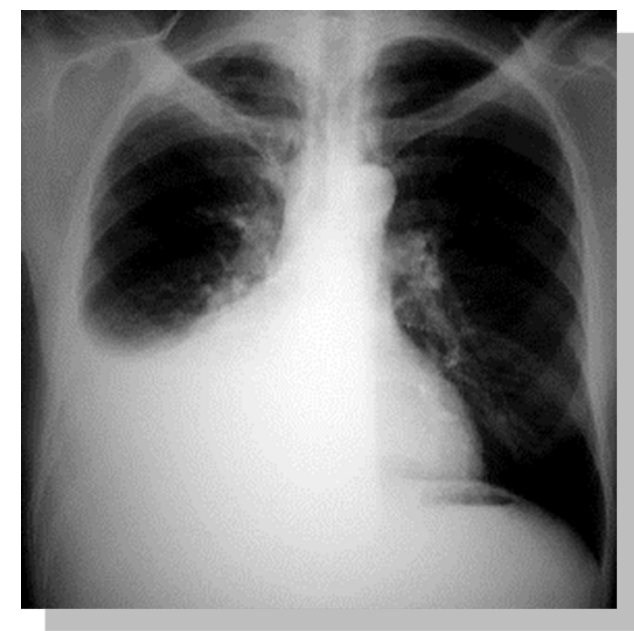
- pain radiates along the intercostal nerves
- spasms of paravertebral muscles



<https://coloradopaincare.com/condition/thoracic-back-pain/>

Pneumonia, pleuritis

- pain
 - lateralized (lungs do not hurt, pleura hurts)
 - exacerbated by coughing, breathing
- high temperature (fast pulse)
- cough
- shortness of breath
- fatigue



Learning outcomes:

- Student is able to list the most frequent reasons of chest pain.
- Student masters the concepts of visceral and parietal pain.
- Student is able to provide first aid to a casualty with chest pain.

Literature:

- <https://www.mayoclinic.org/diseases-conditions/heart-attack/symptoms-causes/syc-20373106>
- <https://www.mayoclinic.org/diseases-conditions/pulmonary-embolism/symptoms-causes/syc-20354647>
- <https://www.mayoclinic.org/diseases-conditions/chest-pain/symptoms-causes/syc-20370838>

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