Cor pulmonale

The World Health Organization defines **chronic cor pulmonale** (pulmonary heart) as **right ventricular hypertrophy**. It arises as a result of a disease that affects the function and/or structure of the lungs , with the exception of conditions where the pulmonary involvement is the result of primary left-sided heart disease or congenital heart defects.[1] It follows that:

1. Chronic cor pulmonale is hypertrophy of the right ventricle resulting from lung involvement (precapillary pulmonary hypertension).
2. Right ventricular hypertrophy caused by a cause other than lung disease (left-sided heart failure , mitral stenosis, congenital heart disease) is not cor pulmonale.

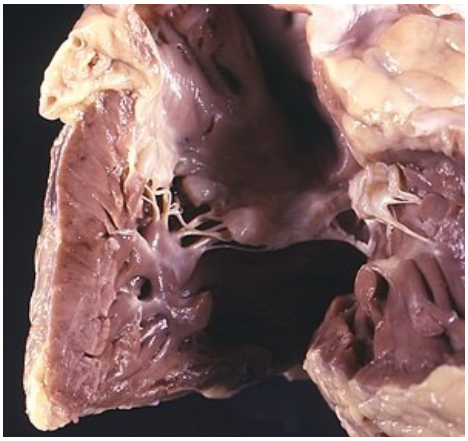
Chronic cor pulmonale

Chronic cor pulmonale (*cor pulmonale chronicum*) is hypertrophy of the right ventricle of the heart, which develops as a result of lung disease and progressive precapillary pulmonary hypertension. [2].The mean pressure in *the a. pulmonalis* increases above 20 mmHg[2], the right ventricle is forced to pump blood against greater resistance and thus reactively hypertrophies.

Acute cor pulmonale

Acute cor pulmonale (*cor pulmonale acutum*) is **dilatation** of the right ventricle resulting from acute precapillary pulmonary hypertension. The most common cause of sudden precapillary pulmonary hypertension is a massive pulmonary embolism[2].

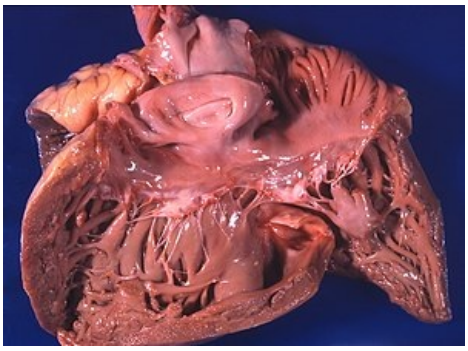
During a sudden massive pulmonary embolization , pulmonary resistance will increase (by clogging the lumen of the vessels and at the same time by reflex vasoconstriction of the rest of the pulmonary bed). Because of greater pulmonary resistance, it is harder for the right **ventricle to pump blood** . Its work increases and at the same time (compression of venous blood) **the pressure in the right atrium increases** . The whole process results in right ventricular dilatation and dysfunction.



Cor pulmonale – hypertrophy of the right ventricle

Decompensated chronic cor pulmonale

This is a condition where, in addition to symptoms of right-sided heart insufficiency (swelling of the right ventricle, increased filling of jugular veins, hepatomegaly, anasarca, ascites), **a metabolic disorder** with hypoxemia and/or hypercapnia appears.[2][3]



Cor pulmonale – hypertrophy of the right ventricle

Clinical signs

The clinical symptoms of cor pulmonale are very closely related to pulmonary hypertension, they are the following:

- symptoms of the underlying disease + exertional dyspnea and lack of performance, non-productive cough ,
- anginal pain – as a result of right ventricular ischemia,
- collapsing states (syncope, presyncope) – related to left ventricular failure (advanced states),
- hemoptysis - rarely,
- hoarseness from paralysis of the left-sided *recurrent laryngeal* nerve – pressure-enlarged lung (a very rare complication),
- pulsation in the precordium and epigastrium, accentuation and split II. sounds, diastolic murmur (Graham-Steel).

Diagnostics

- **Echocardiography** – a basic non-invasive examination method, will help determine the size, shape, hypertrophy and function of the right ventricle. At the same time, it can help estimate the pressure in the pulmonary artery (detection of pulmonary hypertension).
- **ECG** – the so-called **P pulmonale** (sharp P, high even more than 3 mm), higher voltage of the R wave and displacement of the heart axis more than +105°.
- **X-ray** – **change of cardiac shadow** .
- **CT , MRI** – imaging of heart compartments, **right ventricular hypertrophy** to left ventricular compression.

- **Laboratory examination** – markers of heart failure (natriuretic peptides, uric acid , cardiac troponins).

Therapy

Therapy is focused on the underlying cause.

Pulmonary arterial hypertension (PAH) therapy

Therapy is determined based on the patient's shortness of breath classification (NYHA classification).

- Supportive therapy (anticoagulants and diuretics);
- specific **vasodilation treatment** (calcium channel blockers , endothelin receptor antagonists, phosphodiesterase 5 inhibitors and prostacyclin analogues).

Lung disease therapy

Focused on the treatment of diseases that cause pulmonary hypertension (typically COPD , pulmonary fibrosis).

- Adequate treatment of the underlying disease;
- oxygen therapy - it has been shown here to prevent the progression of pulmonary hypertension and improve the prognosis of the disease (the specific vasodilator treatment used for PAH has not yet been successful here) .

Pulmonary embolism therapy

- **Anticoagulant treatment (low molecular weight heparin and warfarin);**
- **thrombolytic treatment (mostly total).**

Links

Related articles

- Pulmonary arterial hypertension
- Pulmonary embolism
- Pulmonary embolism (ECG)
- Nonthrombotic pulmonary embolism

Source

- PASTOR, Jan. *Langenbeck's medical web page* [online]. ©2006. [cit. 2010]. <http://www.freewebs.com/langenbeck/Kardiologie.rar>.

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2. HOMOLKA, Jiří. Cor pulmonale. *Postgraduální medicína* [online]. 2003, y. -, no. 6, p. 616-620, Available from <https://zdravi.euro.cz/clanek/postgradualni-medicina/cor-pulmonale-156494>. ISSN 1212-4184.
3. DINDOŠ, Ján. Cor pulmonale chronicum z pohledu praktického lékaře. *Zdravotnické noviny: Lékařské listy* [online]. 2001, y. -, no. 50, p. 18, Available from <https://zdravi.euro.cz/leky/>. ISSN 1214-7664.

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