CONDITION

Cor pulmonale

Cor pulmonale is strain or failure of the right side of the heart caused by high pressure in the lungs' blood vessels.

WHAT IT IS
Right-heart strain from high pressure in lung blood vessels

BODY SYSTEM
Heart, circulation, and lungs

MAIN SYMPTOMS
Breathlessness, fatigue, ankle swelling, chest discomfort

WHAT CAUSES IT
Lung disease, low oxygen, or blocked lung arteries

HOW IT IS DIAGNOSED
Echocardiogram; right-heart catheterization confirms lung artery pressure

MAIN TREATMENT
Treating the cause, oxygen support, and fluid control

CAN IT BE CURED?
Sometimes - reversible causes can recover

IS IT AN EMERGENCY?
Sometimes - sudden severe breathlessness, chest pain, or fainting

LONG-TERM OUTLOOK
Often chronic; outlook follows the underlying lung condition

Overview

Cor pulmonale is enlargement, strain, or failure of the right side of the heart caused by high pressure in the lungs' blood vessels.

The right ventricle pumps blood to the lungs and normally works against low pressure. Lung disease, low oxygen, or blocked lung arteries can raise this pressure. The right ventricle may then thicken, stretch, and weaken.

Cor pulmonale is not a single disease. It results from another problem affecting the lungs or their blood vessels, rather than disease that begins in the left side of the heart.

Most cases develop gradually and are called chronic cor pulmonale. Acute cor pulmonale develops suddenly when pressure rises abruptly, such as during a large pulmonary embolism-a

blood clot blocking a lung artery.

Symptoms

Early symptoms can resemble those of the underlying lung condition. Breathlessness and reduced stamina may gradually worsen.

Possible symptoms include:

When the right side of the heart cannot move blood forward effectively, fluid can collect in the tissues. This may cause swelling and rapid weight gain over several days.

Blue or grey lips and fingertips can indicate low oxygen. On darker skin, also check whether the lips, tongue, palms, or nail beds look different from usual.

Sudden severe breathlessness, chest pain, fainting, or coughing up blood needs urgent assessment.

- Breathlessness during activity or, later, at rest
- Unusual tiredness or weakness
- Swelling of the feet, ankles, legs, or abdomen
- Chest pressure, discomfort, or pain
- A fast, pounding, or irregular heartbeat
- Light-headedness or fainting
- Reduced appetite or feeling full quickly

Causes and risk factors

Chronic cor pulmonale usually results from conditions that damage the lungs or cause persistently low oxygen. Common causes include chronic obstructive pulmonary disease (COPD) and interstitial lung diseases, which scar or inflame tissue around the lungs' air sacs.

Other causes include severe sleep-related breathing disorders and conditions affecting the chest wall, nerves, or muscles needed for breathing.

Pulmonary hypertension links these conditions to cor pulmonale. It means pressure is raised in the arteries carrying blood from the heart to the lungs, forcing the right ventricle to work harder.

Repeated or unresolved blood clots can cause chronic thromboembolic pulmonary

hypertension by narrowing or blocking pulmonary arteries. A large, sudden pulmonary embolism can cause acute cor pulmonale because the heart has no time to adapt.

Cor pulmonale is not usually inherited, although some conditions that cause lung disease or pulmonary hypertension can run in families. Smoking increases the risk of COPD and worsens lung and blood vessel damage. Risk generally rises with the severity and duration of the underlying condition.

Diagnosis

Diagnosis involves identifying right-heart strain and the lung or blood vessel condition causing it.

A healthcare professional may ask about breathing, activity tolerance, sleep, chest symptoms, swelling, smoking, previous blood clots, and existing heart or lung conditions. Examination may identify fluid retention, low oxygen, unusual heart sounds, or raised pressure in the neck veins.

An echocardiogram uses ultrasound to assess the heart's chambers and pumping action. It can show an enlarged or weakened right ventricle and estimate lung artery pressure, although this estimate is not always exact.

Right-heart catheterization is the most direct way to confirm pulmonary hypertension. A thin tube is passed through a vein into the right side of the heart and pulmonary artery to measure pressures and blood flow. It is generally used when the result will affect diagnosis or treatment.

Other tests may include:

BNP or NT-proBNP blood tests may show that the heart is under strain, but cannot confirm the cause alone.

- An electrocardiogram (ECG) to record heart activity
- Chest X-rays or CT scans
- Blood tests, including kidney and liver function tests
- Oxygen measurements at rest, during activity, or while sleeping
- Lung function tests
- A ventilation-perfusion scan or CT scan to look for clots
- A sleep study if sleep apnoea or overnight low oxygen is suspected

Treatment and management

Treatment addresses the underlying cause, reduces strain on the right ventricle, and manages symptoms. Acute and chronic cor pulmonale require different approaches.

For chronic lung disease, treatment may include inhaled medicines, infection treatment, pulmonary rehabilitation, and support to stop smoking. Pulmonary rehabilitation combines supervised exercise, education, and breathing support.

Long-term oxygen may be recommended when testing confirms persistently low oxygen. Oxygen does not help everyone who feels breathless, and its amount and timing should be based on measured oxygen levels and reassessed when appropriate.

Diuretics, or water tablets like furosemide or hydrochlorothiazide , may reduce leg or abdominal swelling by removing excess salt and water. Monitoring is important because removing too much fluid can lower blood pressure, impair kidney function, or reduce blood flow to the heart.

Blood clots are treated with anticoagulants like warfarin or apixaban to reduce further clotting. Some people with chronic thromboembolic pulmonary hypertension may be assessed for surgery or a catheter procedure to clear blocked arteries.

Medicines designed for pulmonary arterial hypertension are not suitable for every form of cor pulmonale. In some lung conditions they may not help and can disrupt how air and blood flow are matched in the lungs. A pulmonary hypertension specialist may use them in selected cases.

Acute cor pulmonale requires hospital care. Treatment may include oxygen or breathing support, medicines to support circulation, and urgent treatment of the cause, such as a pulmonary embolism.

Complications

Cor pulmonale can cause right-sided heart failure, increasing fluid retention and reducing blood flow to organs.

Other complications include abnormal heart rhythms, kidney problems, liver congestion, low blood pressure, and reduced oxygen delivery. Severe disease may limit everyday activity and increase the risks associated with infections or further blood clots.

Managing the underlying condition and reporting sustained symptom changes may help detect complications earlier.

Prevention

Cor pulmonale cannot always be prevented, particularly when lung scarring is already established.

You may reduce further lung and heart strain by not smoking, avoiding second-hand smoke, and using prescribed treatment for lung or sleep-related breathing conditions.

Vaccination against respiratory infections may be advised according to your age, health, and local recommendations. People at increased risk of blood clots may need preventive measures around surgery, hospital stays, or long periods of limited movement.

Regular follow-up can identify falling oxygen levels, pulmonary hypertension, or fluid retention before symptoms become severe.

Living with it and what to expect

The outlook depends largely on the cause. Right-heart function may improve when a reversible problem, such as a treatable blood clot or severe overnight low oxygen, is corrected. With lasting lung damage, treatment usually aims to slow progression, reduce symptoms, and preserve independence.

Symptoms may remain stable for months or years or gradually restrict activity. Respiratory infections, blood clots, and lung disease flare-ups can cause setbacks. No test can predict one person's exact course.

Monitoring may include clinic reviews, blood tests, oxygen checks, echocardiograms, or walking assessments. Follow-up should also review swelling, weight changes, sleep, medicine effects, and practical support.

Gentle activity within your limits can help maintain strength. Pulmonary rehabilitation offers a structured plan when breathlessness makes exercise difficult. Pacing tasks and allowing recovery time may make daily activities easier.

If you use home oxygen, follow its safety instructions. Oxygen supports combustion and must be kept away from smoking, flames, and heat sources.

When to get medical help

Arrange a routine review if breathlessness is gradually worsening, normal activities are becoming harder, or swelling is increasing. Also seek advice for repeated dizziness, a persistent racing heartbeat, reduced appetite caused by abdominal swelling, or rapid weight gain that may indicate fluid retention.

Seek urgent medical help for:

Call emergency services if breathing is severely difficult, chest pain is intense or persistent, the person collapses, or they are difficult to wake. These signs can occur with a major blood clot, dangerously low oxygen, or acute right-heart failure.

- New or rapidly worsening breathlessness
- New chest pain or pressure
- Fainting or nearly fainting
- Coughing up blood
- A new fast or irregular heartbeat with weakness or breathlessness
- Marked drowsiness, confusion, or blue or grey lips
- Sudden swelling or pain in one leg, especially with breathlessness

Common questions

Is cor pulmonale the same as heart failure?

It is a form of right-sided heart strain or failure caused by high pressure in the lungs' circulation. Other types of heart failure may begin in the heart muscle, valves, or left side of the heart.

Can cor pulmonale go away?

Sometimes. Improvement is more likely when the cause can be removed or controlled, such as a treatable clot or severe low oxygen. Damage caused by long-term lung disease may be permanent, although treatment can reduce symptoms and strain.

Is cor pulmonale the same as pulmonary hypertension?

No. Pulmonary hypertension is high pressure in the lung arteries. Cor pulmonale describes the resulting structural or functional effects on the right ventricle. Pulmonary hypertension can exist before right-heart failure develops.

Can I exercise with cor pulmonale?

Many people benefit from carefully planned activity, but the safe level depends on symptoms, oxygen levels, and the underlying condition. Pulmonary rehabilitation can provide supervised exercise. Stop and seek advice if activity causes chest pain, faintness, or severe breathlessness.

Will I need oxygen for the rest of my life?

Not everyone needs oxygen. It is prescribed when measurements show oxygen levels are low

enough to benefit. It may be long term when lung damage is permanent or temporary when the cause improves.

How serious is cor pulmonale?

It can be serious because the right side of the heart is working under abnormal pressure. The outlook depends on the cause, the severity of right-heart dysfunction, oxygen levels, and response to treatment.

Sources

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