CONDITION

Lung carcinoid tumors

Lung carcinoid tumors are uncommon, usually slow-growing cancers that begin in hormone-producing cells in the lungs.

WHAT IT IS
Usually slow-growing neuroendocrine cancer arising in the lungs

BODY SYSTEM
Lungs and airways

MAIN SYMPTOMS
Persistent cough, wheezing, coughing blood, repeated chest infections

WHAT CAUSES IT
Usually unknown cellular changes

HOW IT IS DIAGNOSED
Imaging and a tissue sample examined under a microscope

MAIN TREATMENT
Surgery when localized; medicines or radiation when advanced

CAN IT BE CURED?
Sometimes - localized tumors may be removed completely

IS IT AN EMERGENCY?
Sometimes - severe breathlessness or coughing significant blood

LONG-TERM OUTLOOK
Often slow-growing, but recurrence or spread can occur

Overview

Lung carcinoid tumors are cancers that begin in neuroendocrine cells in the lungs. Neuroendocrine cells receive signals from nerves and can release hormones into the blood.

These tumors are different from the more common types of lung cancer. They also behave differently from small-cell lung cancer and large-cell neuroendocrine carcinoma, which usually grow more quickly.

Doctors divide lung carcinoid tumors into two main groups:

Both types can invade nearby tissue or spread, so neither is considered harmless. However, many are found while they are still limited to the lung and can be treated with surgery.

Some tumors grow inside a major airway. They may partly block airflow and cause repeated

infections in the same area of the lung. Others grow near the outside of the lung and may be found by chance during a scan performed for another reason.

- Typical carcinoids usually grow slowly and are less likely to spread.
- Atypical carcinoids tend to grow faster and are more likely to spread to lymph nodes or other organs.

Symptoms

A small lung carcinoid may cause no symptoms. Symptoms are more likely when a tumor narrows an airway, irritates the lung, or has spread.

Possible symptoms include:

Wheezing from an obstructed airway can sometimes be mistaken for asthma. A lung infection may improve with treatment but return if the airway remains blocked.

A minority of lung carcinoid tumors release substances that cause carcinoid syndrome . Symptoms can include episodes of facial or upper-body flushing, diarrhea, a racing heartbeat, or wheezing. These symptoms are more common when a hormone-producing tumor has spread to the liver, but they can occasionally occur in other circumstances.

These symptoms have many possible causes. Having one does not mean that you have a lung carcinoid tumor.

- A cough that does not go away
- Coughing up blood or blood-streaked mucus
- Wheezing, sometimes mainly on one side
- Shortness of breath
- Chest discomfort
- Repeated pneumonia or other chest infections in the same part of the lung
- Tiredness or unexplained weight loss, especially with more advanced tumors

Causes and risk factors

The exact cause is usually unknown. A tumor develops when genetic changes allow a neuroendocrine cell to grow and divide without normal control. These changes are generally found only in the tumor and are not changes that a person was born with.

Unlike the main types of lung cancer, typical lung carcinoid tumors do not have a strong established link with tobacco smoking. Some studies have found a closer association between smoking and atypical carcinoids, but smoking is not considered the main cause of lung carcinoids.

Rarely, lung carcinoid tumors occur in people with multiple endocrine neoplasia type 1 , or MEN1. This is an inherited condition that increases the chance of tumors in several hormone-producing organs. A personal or family history of MEN1 may lead to genetic counseling and testing.

Most people diagnosed with a lung carcinoid have no inherited syndrome or clearly identifiable risk factor.

Diagnosis

The first test is often a chest X-ray or computed tomography scan. A CT scan uses X-rays to create detailed pictures and can show the tumor's size, location, and relationship to nearby airways and blood vessels.

A diagnosis must be confirmed by examining tumor tissue under a microscope. Tissue may be obtained through:

Lung carcinoids can contain many blood vessels, so the team performing a biopsy plans carefully for possible bleeding.

A pathologist examines the sample to confirm that it is a neuroendocrine tumor and to classify it as typical or atypical. The classification is based mainly on how actively the cells are dividing and whether areas of dead tumor cells, called necrosis, are present.

Further tests help establish the stage , meaning how far the tumor has grown or spread. These may include CT scans of the chest and abdomen, brain imaging in selected situations, and imaging of the tumor's hormone receptors.

Somatostatin receptor PET scanning uses a small amount of radioactive tracer to find tumor cells with receptors for the hormone somatostatin. It can help assess spread and determine whether receptor-targeted treatments might be useful. Another type, FDG PET, may be used when a faster-growing tumor is suspected.

Blood or urine tests may measure substances released by the tumor if you have flushing, diarrhea, or other signs of hormone production. These tests do not replace a biopsy.

- Bronchoscopy , in which a thin camera is passed through the mouth or nose into the airways

- A needle biopsy guided by a CT scan
- Surgery, if an earlier biopsy is not possible or does not provide enough tissue

Treatment and management

Treatment is based on whether the tumor is typical or atypical, its location and stage, whether it produces hormones, and your general health. Care may involve thoracic surgeons, lung specialists, oncologists, radiologists, pathologists, and neuroendocrine tumor specialists.

Surgery is the main treatment when the tumor is limited to the lung and can be removed safely. The aim is to remove all visible cancer while preserving as much healthy lung as possible. Depending on the location, surgery may remove the tumor and a small amount of lung, one section or lobe, or less commonly an entire lung. Nearby lymph nodes are usually assessed for cancer cells.

Some small tumors growing mainly inside an airway can be removed or reduced through a bronchoscope. This may relieve a blockage or help manage someone who cannot have lung surgery. It is not suitable for every tumor because disease may extend through the airway wall.

If surgery is not possible, other treatments may include:

Advanced lung carcinoid may be managed over time with more than one treatment. Treatment does not always need to begin immediately when a tumor is stable, slow-growing, and causing no symptoms. In that situation, scheduled scans and clinical review may be considered.

- Somatostatin analogues , which can control hormone symptoms and may slow some tumors with somatostatin receptors
- Everolimus , a targeted medicine that interferes with signals used by some tumor cells to grow
- Peptide receptor radionuclide therapy , or PRRT, which carries radiation directly to selected tumors with somatostatin receptors
- Chemotherapy , particularly for some progressing atypical carcinoids or tumors that do not respond to other options
- Radiation therapy to control a tumor that cannot be removed, treat a specific area of spread, or ease symptoms

Complications

A tumor growing inside an airway can interfere with drainage and airflow. This may cause

repeated pneumonia, partial collapse of part of the lung, persistent wheezing, or breathlessness.

Bleeding from the tumor can produce blood-streaked mucus. Heavy or continuing bleeding is less common but requires urgent assessment.

Lung carcinoids can spread to nearby lymph nodes or distant organs. The liver, bones, and other parts of the lung are possible sites. Spread is more likely with atypical carcinoids, although it can occur with either type.

Long-standing carcinoid syndrome can occasionally damage heart valves, especially those on the right side of the heart. This is called carcinoid heart disease. Monitoring may include heart imaging when hormone levels and symptoms suggest a risk.

A carcinoid crisis is a rare, sudden release of tumor-related substances that can cause major changes in blood pressure, severe flushing, wheezing, or heart problems. Medical teams take precautions around surgery or procedures when they believe someone is at risk.

Prevention

There is no proven way to prevent most lung carcinoid tumors because their cause is usually unknown. Avoiding tobacco has many important benefits for the lungs and reduces the risk of other lung cancers, but it cannot guarantee that a carcinoid tumor will not develop.

Routine lung cancer screening is designed for people at high risk from smoking. It is not a specific screening program for lung carcinoid tumors.

If MEN1 runs in your family, genetic counseling can explain testing and surveillance options. This cannot prevent an inherited genetic change, but it may help identify related tumors earlier.

Living with it and what to expect

The course can differ greatly between people. A small typical carcinoid removed completely may never return. Atypical carcinoids and tumors that have reached lymph nodes or distant organs have a greater chance of returning or progressing.

Lung carcinoids often change more slowly than common lung cancers. Even so, recurrence can happen years after treatment. Follow-up may therefore continue for many years and usually includes appointments, symptom review, and imaging. The schedule is based on the original tumor, its stage, treatment, and later scan results.

Recovery after lung surgery takes time. Breathlessness, discomfort, coughing, and tiredness

commonly improve over weeks or months, although the amount of lasting change depends partly on how much lung was removed and your health before surgery. Pulmonary rehabilitation may help some people rebuild strength and confidence with activity.

People with advanced tumors may live with the condition for years while having periods of treatment and monitoring. Symptoms may come from the tumor, hormone release, or treatment effects. Reporting changes between scheduled visits can help the care team adjust symptom support or decide whether reassessment is needed.

When to get medical help

Arrange a routine medical appointment if you develop a cough or wheeze that persists, repeated infections in the same area of the lung, unexplained flushing or diarrhea, or occasional blood-streaked mucus. If you have already been treated, report new symptoms and attend planned scans even when you feel well.

Seek urgent medical assessment if you cough up more than a few streaks of blood, have increasing shortness of breath, or develop fever and worsening breathing during a chest infection.

Call emergency services for:

These signs can have causes other than a carcinoid tumor, but they need prompt assessment.

- Severe or sudden difficulty breathing
- Heavy or continuing coughing of blood
- Fainting, confusion, or blue or grey lips
- Severe chest pain, especially with breathlessness or sweating

Common questions

Is a lung carcinoid tumor cancer?

Yes. Lung carcinoids are malignant neuroendocrine tumors, meaning they can invade nearby tissue or spread. Typical carcinoids usually behave less aggressively than atypical carcinoids and most other lung cancers.

Can a lung carcinoid tumor be cured?

Sometimes. Surgery can be curative when the tumor is confined to the lung and removed completely. Cure is less likely once the tumor has spread to distant organs, but treatment may

control growth and symptoms for a long time.

Is it caused by smoking?

Usually not. Typical lung carcinoids have no strong established relationship with smoking. Atypical carcinoids may have some association, but people who have never smoked can develop either type.

How fast do lung carcinoid tumors grow?

Many grow slowly, particularly typical carcinoids. Atypical carcinoids generally grow faster, but the rate cannot be predicted from the name alone. Comparing scans over time and examining tissue give more useful information about an individual tumor.

Will I need chemotherapy?

Not necessarily. Surgery is usually preferred for a localized tumor. Chemotherapy is more often considered for certain advanced or progressing tumors. Other options can include somatostatin analogues, targeted treatment, PRRT, or radiation.

Can a lung carcinoid come back after surgery?

Yes, although the chance is lower for a completely removed typical carcinoid than for an atypical or more advanced tumor. Because recurrence may occur years later, long-term follow-up is often appropriate.

Sources

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