

Symptoms of Lung Cancer

As a lung cancer survivor, your experiences are in some respects unique, beginning with your symptoms. It's important to note that the process of the discovery of cancer is, by most people's accounts, associated with great emotional upheaval. There may be a few of us who are so highly evolved spiritually or who have lived so full a life that we accept a cancer diagnosis with equanimity, but this is not the case for most of us.

Your unique illness

Lung cancer, formally called bronchogenic carcinoma, is not one disease, but a collection of diseases that affect the same organ and often cause similar symptoms.

It might be tempting to compare your experiences with others who have had lung cancer, but it would be best to avoid making uneven comparisons that might upset you, as is likely to happen if you don't know the precise types and stages of lung cancers being compared. If someone else experienced a treatment failure, for example, you might assume that your treatment will fail as well. Please keep in mind that the variation in lung cancer types means that your experience with symptoms, diagnosis, and treatment might well be very different from someone else's.

Symptoms and syndromes

Some very noticeable symptoms of lung cancer, such as persistent cough, are directly associated with pulmonary (lung) function and are reasonably well understood. Other symptoms are more obscure, involving organs outside the respiratory system. Still other symptoms involve metabolic systems that seem not to be related at all to lung cancer.

In the course of getting a diagnosis, you may hear reference to a particular syndrome. A syndrome is a collection of simultaneous symptoms with a common cause, observed often enough in patients with a given disease to characterize that disease.

The lists of symptoms in the sections that follow may seem complex or ominous. Symptoms and syndromes are listed here to indicate to you the range of things your doctors may look for, to help give some reason

behind a diagnostic test or exam that may seem odd on its face, and to give you an idea of the range of symptoms that lung cancers may cause. As you can see, symptoms vary tremendously. Discuss any symptoms with your doctor.

Pulmonary symptoms

The symptoms of lung cancer that are clearly and directly related to lung function are:

- Coughing, the most common symptom, experienced by 74 percent of patients
- Bloody sputum (phlegm; 57 percent)
- Shortness of breath (37 percent)
- Chest pain (25 percent)
- Hoarseness (18 percent)
- Paralysis of the diaphragm, either symptomless or perceived as shortness of breath
- Wheezing or vibrating breathing noises (stridor)
- Recurrent pneumonia or bronchitis
- Difficulty swallowing (dysphagia)

Symptoms in other organs

Non-respiratory symptoms associated with lung cancer might be associated with pressure of a tumor on another organ or with spread of disease (metastasis) outside the lungs or bronchial tubes.

The symptoms listed below have been associated with spread of disease in many patients. Unlike the list for pulmonary symptoms, the order of this list is not indicative of frequency of occurrence. In some cases, several of these symptoms might occur together.

- Swelling of the face, arms, and neck, possibly with visible veins on the skin of the chest caused by superior vena cava syndrome (SVCS), pressure of a tumor on the large chest vein known as the superior vena cava.
- Pancoast syndrome, caused by a tumor that presses on a nerve in the superior sulcus, a

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groove in the upper lung and its sac through which runs a major artery. Symptoms of Pancoast syndrome include:

- Horner's syndrome, including weak or drooping eyelid, lessened or no perspiration on one side of the face, and a smaller pupil in one eye
- Pain in the shoulder
- Weakening of hand muscles
- Destruction of bone, which might be perceived as bone pain
- Headache
- Weakness, numbness, or paralysis
- Dizziness
- Partial loss of vision
- Bone or joint pain
- Abdominal pain upon probing
- Unexplained weight loss
- Loss of appetite
- Unexplained fever
- Yellowing of the skin (jaundice)
- Fluid in the chest or abdomen (effusion, ascites)
- Cardiac symptoms, including thready or irregular pulse and difficulty breathing

Rare symptoms of metastasis include:

- Lumps in or beneath the skin
- Protrusion of the eyes
- Eyelid tumors
- Perforation of the bowel experienced as severe abdominal pain with fever
- Acute pancreatitis experienced as severe abdominal pain and swings in blood sugar levels

- A lump in a salivary gland
- A lump in one tonsil
- A breast lump
- Bleeding in the gastrointestinal tract detectable with fecal occult testing

Symptoms linked to tumor metabolism

Ten to twenty percent of lung cancer patients experience symptoms or groups of symptoms (syndromes) in organs that are neither invaded by nor obstructed by the tumor. These findings are called paraneoplastic syndromes. In some instances they appear early in the development of lung cancer and might trigger early diagnosis.

Investigators believe paraneoplastic syndromes are caused by various substances released by tumors, such as hormones, hormone-like proteins, bioactivators called cytokines, proteins called antibodies released by white blood cells, or by differences in the availability of critical metabolic substances such as iron.

Some paraneoplastic syndromes are rare. Some can be caused by other cancers or other illnesses in addition to lung cancer. Not all subtypes of lung cancer are capable of causing all of the paraneoplastic syndromes.

The most common paraneoplastic syndromes in non-small cell lung cancer patients are:

- Hypercalcemia (high blood calcium levels). Overstimulated parathyroid glands or cytokines released by the tumor such as tumor necrosis factor, interleukin-1, transforming growth factor alpha, and some prostaglandins might recruit too much calcium from bone into the blood. Another possible cause of hypercalcemia is invasion of bone by a tumor. The many symptoms associated with hypercalcemia are described under "Endocrine syndromes" below.
- Excess growth of certain bones, especially in fingertips (hypertrophic osteoarthropathy)
- Blood clots
- Excess breast growth in men (gynecomastia)

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The most common paraneoplastic syndromes in small cell lung cancer patients are:

- Syndrome of inappropriate antidiuretic hormone (SIADH), causing low blood levels of sodium. SIADH is caused by secretion of antidiuretic hormone by the tumor. Antidiuretic hormone, also called vasopressin, acts on the kidney to lower levels of sodium in the blood (hyponatremia). The many symptoms associated with SIADH are described under "Endocrine syndromes" below.
- Blood clots
- Loss of balance and unsteady arm and leg motion (cerebellar degeneration)

The sections that follow, organized by body system, describe these and other paraneoplastic syndromes in detail.

Blood (hematologic) syndromes

Certain lung cancer tumors produce hormones, antibodies, or cytokines that can disrupt the normal growth and activity of red blood cells, white blood cells, or platelets. In other instances, blood imbalances might be caused by iron deficiency or chemotherapy. These might manifest as:

- Excessive numbers of platelets (thrombocytosis), causing blood clots
- Too few or poorly functioning platelets, causing bruises and tiny "blood blisters" (thrombocytopenic purpura)
- Irregular growth, appearance, or untimely destruction of red blood cells (polycythemia, hemolytic anemia, red-cell aplasia) causing fatigue
- Abnormal levels or functions of blood proteins (dysproteinemia) causing fatigue, headache, or dizziness
- Abnormal white blood cell production or function (leukemoid reaction, eosinophilia) causing fevers, fatigue, or perhaps no symptoms at all

Vein and artery (vascular) syndromes

Certain types of lung tumors can affect the circulatory system as follows:

- Thrombophlebitis, an inflammation in an artery or vein caused by a blood clot
- Arterial thrombosis, a blood clot in an artery
- Nonbacterial thrombotic endocarditis (NBTE), a deposition of material onto the valves of the heart

Skin (cutaneous) syndromes

Various skin conditions are associated with some cases of lung cancer. These conditions are thought to be caused by aberrant behavior of white blood cells and their antibodies reacting either to the tumor or to substances produced by the tumor:

- Chronic inflammation of the skin (dermatomyositis) often occurs in conjunction with muscle and subcutaneous tissue inflammation.
- Gray-black warty patches on the elbows, knees, armpits, or groin (acanthosis nigricans)
- Itching (pruritis)
- Chronic red patches (erythema multiforme)
- Dark patches (hyperpigmentation)
- Hives (urticaria)
- Scaly patches (scleroderma)
- New tissue growth in fingertips (digital clubbing), a widening and rounding of the fingertips and nails and, when fingers are viewed from the side, a loss of normal indentation where the fingernail emerges from the skin.

Musculoskeletal syndromes

Certain lung tumors can cause the following symptoms by producing hormones or causing unusual tissue growth:

- Inflamed muscles, skin, and subcutaneous tissue (polymyositis-dermatomyositis) is thought by some researchers to be a paraneoplastic syndrome. Some researchers believe this finding

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justifies intensive testing for presence of malignancy; other studies have found no link between malignancy and this syndrome.

- Abnormal bone growth in certain bones, especially fingertips (hypertrophic osteoarthropathy). This abnormal bone growth is visible on x-ray and bone scans and might be associated with bone or joint pain.
- Softening of the bones (osteomalacia)
- Various painful or dysfunctional muscular symptoms (myopathy)

Nervous system (neurologic) syndromes

Some or most of the paraneoplastic syndromes that affect the nervous system appear to be caused by an attack of antibodies against healthy tissue. Antibodies are white blood cell proteins that normally sequester and immobilize foreign tissue such as viruses or bacteria.

- Cerebellar degeneration, causing problems with balance or unsteady arm and leg movements.
- Lambert-Eaton myasthenic syndrome (LEMS), characterized by muscle weakness and dysfunction, especially in the pelvis and thighs and, at times, joint soreness, difficulty swallowing, and other symptoms resembling myasthenia gravis.
- Peripheral neuropathy, evidenced by pain, tingling, or numbness in hands or feet.
- Encephalopathy, an infection or inflammation in the brain.
- Myelopathy, presenting as bone pain or tenderness or bone marrow dysfunction.
- Psychosis, mimicking mental illnesses such as schizophrenia or bipolar disorder.
- Dementia
- Pseudo-obstruction of the bowel, including nausea, vomiting, abdominal pain, and changed bowel habits.
- Rarely, visual changes (retinopathy)

Hormonal (endocrine) syndromes

Certain types of lung cancers are capable of producing hormones that act on organs within the brain (the pituitary and hypothalamus) or upon other organs such as the kidneys, adrenal glands, thyroid, ovaries, or testes.

- Syndrome of inappropriate antidiuretic hormone (SIADH), resulting in low levels of sodium in the blood, often is associated with small cell lung cancer and sometimes bronchial carcinoid tumors. Symptoms include:
 - Fatigue
 - Loss of appetite
 - Muscle cramps or weakness
 - Nausea
 - Vomiting
 - Restlessness and confusion
 - Seizures
 - Coma
 - Respiratory arrest
 - High blood calcium levels (hypercalcemia). Symptoms are: loss of appetite (anorexia), nausea and vomiting, lethargy and weakness, irritability, frequent urination (polyuria), excessive thirst (polydipsia), dehydration, constipation, cardiac symptoms such as irregular pulse, and confusion and coma in acute stages.
- Cushing's syndrome, an overproduction of adrenal hormones by cancerous tissue. The most common symptoms in lung cancer patients are:
 - Weight loss
 - Fluid retention (edema)
 - Muscle weakness (myopathy)
 - High blood pressure (hypertension)
 - Less common Cushing's symptoms in lung cancer patients are stretch marks (striae),

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obesity in the trunk with thinning of arms and legs, moon-shaped face, fatty hump on the back of the neck ("buffalo hump"), bone loss, diabetes, and moodiness.

- Carcinoid syndrome, characterized by skin flushing, diarrhea, and wheezing or asthma symptoms
- High or low blood sugar (hyper- or hypoglycemia)
- Breast growth in males (gynecomastia)
- Discharge of milk from the nipple (galactorrhea)
- Excess levels of growth hormone, possibly linked to excessive bone growth or clubbing of fingers
- Excess calcitonin secretion, usually symptomless
- Excess levels of thyroid-stimulating hormone, possibly causing symptoms of hyperthyroidism such as high blood pressure, heat intolerance, hair loss, moodiness, weight loss.

Miscellaneous syndromes

Several syndromes sometimes associated with lung cancer are not classified within other groups:

- High levels of uric acid in blood (hyperuricemia), causing joint pain
- Nephrotic syndrome, heralded by fluid retention in various body parts, weight gain, high blood pressure, and poor appetite.
- Cachexia, or weight loss in spite of adequate nutrition.

This fact sheet was adapted from *Lung Cancer* (forthcoming) by Lorraine Johnston, © 2000 by Patient-Centered Guides. For more information, call **(800) 998-9938**. This material has been reviewed by an MD and will receive further technical review prior to publication.