CONDITION

Malignant mesothelioma

Malignant mesothelioma is a cancer of the thin tissue lining the lungs, abdomen, or, rarely, other organs.

WHAT IT IS
Cancer of the thin lining around certain organs

BODY SYSTEM
Lungs and chest, abdomen, and rarely heart or testicles

MAIN SYMPTOMS
Breathlessness, chest or abdominal pain, cough, unexplained weight loss

WHAT CAUSES IT
Usually asbestos exposure; sometimes no cause is found

HOW IT IS DIAGNOSED
Imaging followed by a tissue biopsy

MAIN TREATMENT
Surgery, systemic cancer treatment, radiotherapy, and symptom control

CAN IT BE CURED?
Sometimes - rare, early cancers may receive curative treatment

IS IT AN EMERGENCY?
Sometimes - sudden severe breathlessness needs emergency care

LONG-TERM OUTLOOK
Often progressive, but outlook differs by type and stage

Overview

Malignant mesothelioma is a cancer that begins in the mesothelium. This is a thin layer of tissue covering several internal organs.

Most cases develop in the lining around the lungs, called the pleura. This is known as pleural mesothelioma . It is different from lung cancer because it starts outside the lung rather than in the lung tissue.

Mesothelioma can also develop in the lining of the abdomen, called the peritoneum. This is peritoneal mesothelioma . Much rarer forms affect the lining around the heart or the tissue surrounding a testicle.

Mesothelioma often grows along the surface of an organ rather than forming one clear lump. It

may cause fluid to collect in the chest or abdomen. Over time, it can press on nearby organs or spread to other parts of the body.

The condition is strongly linked to asbestos exposure, often many years earlier. Asbestos is a group of heat-resistant mineral fibres that was widely used in construction, insulation, shipbuilding, and some industrial products.

Mesothelioma can be difficult to cure because it is often found after it has spread across a body lining. However, treatment can sometimes slow its growth, relieve symptoms, and help you remain active for longer. A small number of people with early, localised cancer may be considered for treatment intended to remove or control it long term.

Symptoms

Symptoms usually develop gradually. They can be caused by many more common conditions, so having them does not mean you have mesothelioma.

Pleural mesothelioma may cause:

Breathlessness is often related to a pleural effusion , which means fluid has collected between the lung and chest wall. The fluid can prevent the lung from expanding fully.

Peritoneal mesothelioma may cause:

Symptoms from the rare forms depend on where the cancer develops. Mesothelioma around the heart may cause breathlessness, chest discomfort, or an irregular heartbeat. Mesothelioma around a testicle may cause a painless swelling or fluid in the scrotum.

- Increasing shortness of breath
- Pain or heaviness on one side of the chest
- A persistent cough
- Tiredness and reduced stamina
- Unexplained weight loss or reduced appetite
- Sweating, particularly at night
- Swelling of the face or arms in more advanced cases
- Abdominal pain or swelling
- A feeling of fullness after eating a small amount
- Nausea or changes in bowel habits

- Unexplained weight loss
- Fluid in the abdomen, known as ascites

Causes and risk factors

Asbestos exposure is the main known cause of malignant mesothelioma. Tiny asbestos fibres can be breathed in or swallowed. Some may remain in body tissues and cause damage that eventually leads to cancer.

There is usually a long delay between exposure and diagnosis, often several decades. Some people do not remember a specific exposure, especially if it happened briefly or through work many years ago.

Exposure may have occurred in jobs involving:

People may also have encountered fibres brought home on another person's work clothes. Asbestos can still be present in older buildings. It is usually most hazardous when damaged or disturbed, allowing fibres to enter the air.

Not everyone exposed to asbestos develops mesothelioma. Some people diagnosed with it have no known exposure.

Other possible risk factors include previous radiotherapy to the chest or abdomen and rare inherited changes in genes such as BAP1 . An inherited gene change is not the usual cause. Smoking does not cause mesothelioma, although it can cause lung cancer and other serious health problems.

- Building construction, demolition, or renovation
- Insulation, roofing, plumbing, or electrical work
- Shipbuilding, dock work, or railway maintenance
- Mining, manufacturing, or heavy industry
- Repair of older vehicles or machinery containing asbestos parts

Diagnosis

Your clinician will ask about your symptoms, general health, and possible asbestos exposure. It can help to describe every job you have had, including military service, apprenticeships, renovation work, and work done by people in your household.

A chest X-ray may show fluid or thickening around a lung. A CT scan gives a more detailed view

of the chest or abdomen. MRI or PET-CT scans may sometimes be used to assess nearby tissues or look for spread.

Imaging alone cannot usually confirm mesothelioma. A sample of tissue, called a biopsy , is normally needed. A specialist examines the sample under a microscope and may use laboratory stains to identify the type of cell.

For pleural mesothelioma, tissue is often collected during thoracoscopy. In this procedure, a thin viewing instrument is passed through a small cut in the chest wall. Peritoneal tissue may be collected during laparoscopy, which uses a similar instrument to look inside the abdomen.

Fluid may also be drained and tested. However, fluid samples do not always contain enough information to confirm or rule out mesothelioma.

If mesothelioma is confirmed, the team identifies its cell type. The main types are epithelioid, sarcomatoid, and biphasic, which contains both. The cell type, location, extent of spread, and your overall health all help guide treatment.

Treatment and management

Treatment is usually planned by a team experienced in mesothelioma. It may include cancer specialists, surgeons, lung or abdominal specialists, radiologists, specialist nurses, and symptom-control professionals.

The plan is based on where the cancer began, its cell type and stage, whether it can be removed, and how well your lungs, heart, and other organs are working. Your goals and preferences also matter.

Systemic treatment reaches cancer cells throughout the body. It may involve chemotherapy, immunotherapy, or a combination. Chemotherapy interferes with cancer cell growth. Immunotherapy helps the immune system recognise and attack cancer cells. The likely benefits and side effects differ between treatments.

Surgery may be considered for a small, carefully selected group, usually as one part of a wider treatment plan. Operations for pleural mesothelioma may remove the visible cancer and affected pleura. Some operations also remove a lung, but this is major surgery and is not suitable for most people.

Selected people with peritoneal mesothelioma may be offered surgery to remove visible cancer. In some specialist centres, this is combined with heated chemotherapy placed inside the abdomen during the operation.

Radiotherapy uses high-energy radiation. It may be used to control pain or another local

symptom. In some treatment plans, it is used alongside surgery or systemic treatment.

Symptoms can often be treated directly. For example, fluid around a lung may be drained. A procedure called pleurodesis can help stop the fluid returning by sealing the space around the lung. Another option is a small long-term catheter that allows repeated drainage at home.

Palliative care focuses on comfort, function, and quality of life. It can be provided alongside cancer treatment from an early stage. It may help with pain, breathlessness, sleep, appetite, emotional distress, and practical planning.

Clinical trials may offer access to treatments still being studied. Joining a trial is voluntary, and the team should explain its purpose, possible benefits, and uncertainties.

Complications

Pleural mesothelioma can cause repeated fluid collection, worsening breathlessness, chest pain, and reduced lung expansion. Sometimes the lung becomes enclosed by thickened tissue and cannot fully reopen after fluid is drained. This is called a trapped lung.

Peritoneal mesothelioma can cause ongoing fluid build-up, poor appetite, or blockage of the bowel. A blockage may lead to severe abdominal pain, vomiting, and an inability to pass stool or gas.

Cancer and reduced mobility can increase the risk of blood clots. Treatment may also cause complications, including infection, low blood cell counts, fatigue, nausea, or inflammation affecting organs. The risks depend on the treatment used.

Pain, breathlessness, and tiredness can affect sleep, mood, work, and independence. These effects deserve treatment in their own right and should be discussed during follow-up.

Prevention

Not every case of mesothelioma can be prevented. Past exposure cannot be reversed, and some people develop the condition without any known exposure.

Avoiding asbestos fibres can reduce future risk. Do not cut, drill, sand, break, or remove material that may contain asbestos. Undisturbed asbestos is generally less likely to release fibres. Suspected material should be assessed and, if necessary, handled by appropriately trained professionals under local safety rules.

Workplaces where asbestos may be present should use exposure controls and protective procedures. If you may have been exposed, record when and where it happened and tell your

usual clinician.

There is no widely established routine screening test proven to prevent deaths from mesothelioma in people without symptoms. A history of exposure does not mean that repeated scans will necessarily be helpful. Screening or monitoring decisions should be based on your circumstances and specialist advice.

Living with it and what to expect

Mesothelioma is often a long-term, progressive cancer. The speed of change is not the same for everyone. Cell type, location, stage, response to treatment, and general health all influence the course.

Over months or years, treatment may shrink or stabilise the cancer for a time. If it begins growing again, another treatment or a clinical trial may be considered. At other times, the priority may shift toward controlling symptoms and preserving day-to-day comfort.

Follow-up commonly includes discussions about symptoms, physical examination, blood tests, and scans when needed. Contact the team between appointments if symptoms change rather than waiting for the next routine review.

Many people continue ordinary activities, relationships, and interests, although they may need to pace themselves. Pulmonary rehabilitation, gentle activity, nutrition support, breathing strategies, and practical equipment may help with independence.

It can be useful to discuss work, finances, transport, and help at home early. Occupational asbestos exposure may qualify for compensation or other support, depending on where you live and the circumstances of exposure.

Planning ahead does not mean stopping treatment. An advance care plan can record what matters to you and who should speak for you if you cannot communicate. It can be changed at any time.

When to get medical help

Arrange a routine medical appointment if you have persistent breathlessness, chest or abdominal pain, unexplained swelling, a lasting cough, or unexplained weight loss. Mention any past asbestos exposure, even if it happened decades ago.

If you already have mesothelioma, contact your care team promptly about worsening breathlessness, increasing pain, repeated vomiting, new leg swelling, or side effects that make

it difficult to eat, drink, or manage at home.

Follow the urgent instructions provided by your treatment team if you develop a fever or signs of infection during systemic cancer treatment. Some treatments can reduce the body's ability to fight infection.

Seek emergency help for:

- Sudden or severe difficulty breathing
- New severe chest pain, fainting, or confusion
- Coughing up more than a small streak of blood
- Severe abdominal pain with repeated vomiting
- Signs of a serious allergic reaction during or after treatment

Common questions

Is mesothelioma always caused by asbestos?

No. Most cases are linked to asbestos, but some people have no known exposure. Rare genetic factors or previous radiotherapy may contribute in a small number of cases.

How long after asbestos exposure can mesothelioma appear?

It often appears several decades after exposure. This long delay is why an old job, renovation project, or household exposure may still be relevant.

Is mesothelioma the same as lung cancer?

No. Pleural mesothelioma begins in the lining around the lung. Lung cancer begins within lung tissue. They require different tests, staging systems, and treatment decisions.

Can malignant mesothelioma be cured?

Cure is uncommon. Treatment intended to remove or control the cancer long term may be possible for some people with early, localised mesothelioma. For many others, treatment aims to slow growth and control symptoms.

Is mesothelioma contagious or inherited?

It is not contagious. Most cases are not inherited. Rare inherited gene changes can increase risk, so genetic counselling may be offered when personal or family history suggests this possibility.

Should my family be screened if I have mesothelioma?

Usually not. There is no standard screening programme for relatives. Family members may

need advice if they shared asbestos exposure or if an inherited gene change is suspected.

Sources

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