CONDITION

Blastomycosis

Learn how blastomycosis affects the lungs and other organs, including its symptoms, diagnosis, treatment, complications, and follow-up care.

WHAT IT IS
Fungal infection affecting lungs and other organs

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Cough, fever, chest discomfort, shortness of breath

WHAT CAUSES IT
Inhaled Blastomyces fungal spores

HOW IT IS DIAGNOSED
Fungus found by microscopy or culture

MAIN TREATMENT
Prescription antifungal medicine

CAN IT BE CURED?
Sometimes - treatable, but relapse can occur

IS IT AN EMERGENCY?
Sometimes, with severe trouble breathing

LONG-TERM OUTLOOK
Treatable, with possible relapse or lasting damage

Overview

Blastomycosis is an infection caused by fungi in the genus Blastomyces . These fungi live in the environment, especially in moist soil and decaying leaves or wood. Infection usually begins when a person breathes in microscopic fungal spores released into the air after soil is disturbed.

The lungs are the most common site of infection. Some people have no symptoms, while others develop an illness that can resemble pneumonia. In some cases, the fungus travels through the bloodstream from the lungs to the skin, bones, joints, urinary or reproductive organs, or central nervous system. This is called disseminated blastomycosis.

Blastomycosis is most often associated with areas around the Great Lakes and the Ohio, Mississippi, and Saint Lawrence River valleys. Cases also occur in other parts of the United

States and Canada, and the known geographic range continues to change. A person can develop blastomycosis without remembering a specific outdoor exposure.

Blastomycosis generally does not spread from one person to another. It also is not usually passed from an infected dog or other animal to a person. People and animals can become infected after exposure to the same contaminated environment.

The infection matters because its symptoms overlap with bacterial pneumonia, tuberculosis, lung cancer, and other conditions. Prompt recognition can help prevent complications. Blastomycosis is treatable with antifungal medicine, although treatment often continues for several months.

Symptoms

Symptoms usually begin several weeks to a few months after exposure, but the timing can vary. Lung symptoms may develop gradually or begin as a more sudden pneumonia-like illness.

Possible symptoms include:

A chest X-ray or CT scan may show lung changes even when symptoms are mild. In other cases, lung disease can become severe and interfere with the body's ability to receive enough oxygen.

When blastomycosis spreads beyond the lungs, symptoms depend on the affected area. Skin involvement may cause bumps, sores, or crusted areas that slowly enlarge. These lesions can sometimes be mistaken for skin cancer or a bacterial infection.

Bone or joint infection may cause focused pain, swelling, or reduced movement. Involvement of the prostate or other genitourinary organs may cause pelvic discomfort, urinary symptoms, or swelling near the testicle. Infection of the brain or tissues surrounding it may cause severe headache, confusion, weakness, seizures, or other neurological symptoms.

Contact a healthcare professional promptly for a persistent cough, unexplained fever, worsening fatigue, weight loss, or a skin sore that does not heal, especially after time spent in an area where blastomycosis occurs.

Seek emergency care for severe trouble breathing, blue or gray lips, new confusion, fainting, a seizure, coughing up a large amount of blood, or rapidly worsening chest symptoms. These can indicate a serious lung problem or involvement of the nervous system.

- Cough, which may be dry or produce mucus
- Fever or chills

- Chest discomfort
- Shortness of breath
- Tiredness
- Night sweats
- Muscle or joint aches
- Reduced appetite or unintended weight loss

Causes and risk factors

Blastomycosis develops after exposure to Blastomyces fungi. In the environment, the fungus grows as mold. Disturbing contaminated soil or organic material can release spores small enough to be inhaled into the lungs. Inside the body, the organism changes into a yeast form that can cause infection.

Activities that may increase contact with soil and decaying plant material include forestry, farming, excavation, hunting, camping, and work near waterways. Construction or landscaping may also disturb soil. However, many people diagnosed with blastomycosis do not report a clear high-risk activity.

Anyone exposed to the fungus can become infected. The chance of severe or widespread disease may be greater in people who have weakened immune defenses, including those taking medicines that suppress the immune system. Organ transplant recipients and people with certain immune disorders may also face greater risk.

Older adults and people with significant lung or other chronic disease may have more difficulty tolerating a serious pulmonary infection. Pregnancy can affect treatment choices and may be associated with more severe fungal infection.

There is no vaccine for blastomycosis. Completely avoiding the fungus is difficult because contaminated areas cannot be identified by appearance. People with severely weakened immune systems may wish to discuss occupational or recreational soil exposure with their healthcare team.

Diagnosis

Blastomycosis cannot be diagnosed from symptoms alone. A clinician will consider the pattern and duration of symptoms, possible environmental exposures, travel or residence history, immune health, and imaging findings.

Chest X-rays or CT scans can identify lung inflammation, nodules, masses, cavities, or other changes. These findings can support the evaluation but are not specific to blastomycosis.

Confirming the infection usually requires finding the fungus in a sample. Depending on the symptoms, testing may involve sputum, fluid collected from the lungs, drainage from a skin lesion, urine, or a small tissue sample obtained through a biopsy. A laboratory may examine the sample under a microscope or grow the fungus in a culture. Culture can provide a definite diagnosis but may take time because the organism grows slowly.

Urine or blood antigen tests look for fungal proteins. These tests can support a faster diagnosis, particularly when disease is widespread. However, a positive result may also occur with histoplasmosis, another fungal infection. Antigen results must therefore be interpreted with symptoms, imaging, and other laboratory findings.

Antibody blood tests are less reliable for blastomycosis and cannot always confirm or exclude the infection. Routine blood tests may be used to assess inflammation and check kidney, liver, and blood cell function.

If symptoms suggest spread outside the lungs, additional testing may be needed. This might include imaging of painful bones, sampling a skin lesion, or examining spinal fluid when central nervous system infection is suspected.

Treatment and management

People with symptomatic blastomycosis generally need prescription antifungal treatment. The medicine, treatment setting, and length of therapy depend on disease severity, the organs involved, pregnancy status, immune health, and other medical conditions.

Itraconazole is commonly used for mild to moderate disease that does not involve the central nervous system. It is taken by mouth, often for 6 to 12 months. Treatment may need to continue longer when infection involves certain organs or when immune defenses remain weakened.

Itraconazole can interact with many prescription medicines, over-the-counter products, and supplements. Its absorption can also vary by formulation and stomach acidity. Clinicians may order blood tests to measure the medicine level and check liver function. Patients should tell their care team about all medicines they take and report symptoms such as yellowing of the skin, dark urine, severe nausea, new swelling, or worsening shortness of breath.

Amphotericin B is generally used for severe lung disease, central nervous system infection, disease in certain high-risk patients, or illness requiring hospital care. It is given through a vein. A lipid formulation is often preferred because it is usually less harmful to the kidneys than older

formulations. Treatment commonly begins with amphotericin B and later changes to an oral antifungal once the person is stable.

During amphotericin B treatment, the care team checks kidney function and blood levels of minerals such as potassium and magnesium. Fever, chills, and other infusion reactions may occur. Monitoring helps the team manage these effects safely.

Pregnancy requires specialist guidance because some oral antifungal medicines may harm fetal development. Amphotericin B is generally the preferred treatment when blastomycosis must be treated during pregnancy.

Supportive care may include oxygen, fluids, treatment for pain or fever, and help with nutrition. People with severe respiratory failure may need intensive care and mechanical ventilation. Surgery is not routine but may occasionally be used to manage damaged tissue, drain an abscess, or obtain a diagnostic sample.

Do not stop antifungal medicine when symptoms begin to improve unless the prescribing clinician advises it. The fungus may still be present, and stopping early can allow the infection to return.

Complications

Blastomycosis can cause lasting damage if the infection is severe or treatment is delayed. Lung complications may include low oxygen levels, widespread inflammation, respiratory failure, or acute respiratory distress syndrome. Acute respiratory distress syndrome is a serious condition in which fluid and inflammation prevent the lungs from delivering enough oxygen.

The fungus can spread through the bloodstream to other organs. Skin lesions may become large or develop secondary bacterial infection. Infection in bones can weaken them or damage nearby joints. Genitourinary disease may affect the prostate, epididymis, or other structures.

Central nervous system blastomycosis can involve the brain, spinal cord, or the membranes around them. Although uncommon, it requires prolonged treatment because neurological infection can lead to seizures, weakness, confusion, or other lasting problems.

Relapse can occur, particularly if treatment was incomplete, medicine levels were too low, or immune suppression continues. People with weakened immune systems may need longer therapy and closer monitoring.

Follow up

Follow-up is an important part of treatment. Visits may include a review of symptoms, a physical examination, blood tests, medicine-level testing, and repeat chest imaging. Lung images can improve more slowly than symptoms, so an abnormal scan does not always mean treatment has failed.

Take antifungal medicine exactly as directed. Ask the prescribing clinician or pharmacist before starting antacids, acid-reducing medicine like omeprazole or lansoprazole , supplements, or new prescriptions because these can affect antifungal treatment.

Routine follow-up should address lingering cough, fatigue, medication side effects, and the expected return to work or physical activity. Keep scheduled appointments even if you feel well, since laboratory monitoring can identify problems before they cause noticeable symptoms.

Contact the treating clinician promptly if symptoms return during or after treatment, a skin lesion enlarges, bone pain develops, or medicine side effects make it difficult to continue therapy.

Seek emergency care for severe breathing difficulty, new confusion, a seizure, fainting, sudden weakness, or rapidly worsening illness. These symptoms should not wait for a routine follow-up visit.

Sources

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