CONDITION

Hookworm infection

Hookworm infection is an intestinal parasite infection that can cause blood loss and iron-deficiency anaemia.

WHAT IT IS
Intestinal infection caused by parasitic hookworms

BODY SYSTEM
Digestive system and blood

MAIN SYMPTOMS
Itchy rash, stomach pain, diarrhoea, tiredness

WHAT CAUSES IT
Parasitic worms acquired from contaminated soil

HOW IT IS DIAGNOSED
Microscopic or molecular testing of stool samples

MAIN TREATMENT
Antiparasitic medicine and treatment of anaemia

CAN IT BE CURED?
Yes - medicines usually clear the worms

IS IT AN EMERGENCY?
Sometimes - severe anaemia can cause chest pain

LONG-TERM OUTLOOK
Usually good after treatment, but reinfection is possible

Overview

Hookworm infection happens when parasitic worms live in the small intestine. The main species that infect people are Necator americanus and Ancylostoma duodenale . Other hookworm species can occasionally infect humans.

Hookworms attach to the intestinal lining and feed on blood. A small infection may cause no clear symptoms. A heavier or long-lasting infection can lead to iron-deficiency anaemia, meaning there are not enough healthy red blood cells because the body lacks iron.

Hookworm is most common in warm, humid places where sanitation is limited and human waste can contaminate soil. It can affect people who live in or travel to these areas. Walking barefoot or allowing bare skin to touch contaminated soil increases the chance of infection.

The infection is usually curable with antiparasitic medicine. However, treatment does not create lasting immunity, so you can become infected again after another exposure.

Human intestinal hookworm infection is different from cutaneous larva migrans. Cutaneous larva migrans is an itchy, winding skin rash usually caused by hookworms that normally infect dogs or cats. Those larvae generally remain in the skin rather than developing into adult worms in the human intestine.

Symptoms

Many people with hookworm infection have mild symptoms or none at all. Symptoms are more likely when there are many worms, the infection has lasted a long time, or your iron levels were already low.

When larvae first enter through the skin, they may cause:

As the larvae travel through the lungs, some people briefly develop a cough, wheezing or throat irritation. This stage often passes without being noticed.

Once the worms reach the intestine, symptoms may include:

Ongoing blood loss can cause iron-deficiency anaemia. Possible signs include unusual tiredness, weakness, headaches, dizziness, pale skin, shortness of breath during activity or a fast heartbeat. Children with a severe or persistent infection may have difficulty gaining weight and may grow more slowly.

These symptoms have many possible causes. Having them does not mean that you have hookworm.

- An itchy, red or raised rash, sometimes called "ground itch"
- Swelling or irritation where the skin touched contaminated soil
- A winding rash if an animal hookworm is responsible
- Stomach pain or discomfort
- Diarrhoea
- Reduced appetite
- Nausea
- Unexplained weight loss

Causes and risk factors

Adult hookworms in the intestine release eggs that leave the body in stool. If infected stool contaminates warm, moist soil, larvae hatch and develop there.

Most infections begin when the larvae penetrate bare skin. This commonly happens through the feet, although any uncovered skin can be affected. Some hookworm species may also be acquired by swallowing larvae.

Hookworm is not usually spread directly from one person to another. The eggs must first reach suitable soil and develop into infectious larvae.

Your chance of exposure may be higher if you:

A previous infection does not reliably protect you. Reinfection can occur if exposure continues.

Dog and cat hookworms can contaminate sand or soil with their larvae. These species are more likely to cause a skin condition than an intestinal infection in people.

- Live in or visit a warm region where hookworm is common
- Walk barefoot on soil that may be contaminated with human waste
- Sit, lie or work directly on contaminated ground
- Live somewhere without reliable toilets or sewage disposal
- Work in farming, mining or another job involving frequent soil contact

Diagnosis

A healthcare professional will ask about your symptoms, travel, living conditions and possible contact with contaminated soil. They may look for signs of anaemia or examine any rash.

The usual test for intestinal hookworm is a stool test. A laboratory examines the sample under a microscope for hookworm eggs. More than one sample may be needed because eggs are not distributed evenly in every bowel movement.

Molecular tests, which look for parasite genetic material, are available in some laboratories. They may help identify the species, but they are not available everywhere.

Blood tests cannot confirm hookworm on their own. They can show related problems, such as iron-deficiency anaemia. A raised level of eosinophils, a type of white blood cell involved in reactions to parasites, can support the diagnosis but has other possible causes.

Hookworm eggs can look similar to the eggs of some other parasites. The laboratory result must therefore be considered alongside your symptoms and exposure history.

Treatment and management

Hookworm infection is treated with an antiparasitic medicine, also called an anthelmintic. Commonly used medicines include albendazole and mebendazole. Pyrantel pamoate may be an option in some settings.

The right medicine and treatment plan can be affected by age, pregnancy, local availability and other health conditions. A healthcare professional can explain which option is appropriate. Do not take veterinary worming products or medicines intended for another person.

If the infection has caused iron-deficiency anaemia, treatment may also include iron replacement and advice about nutrition. Severe anaemia sometimes needs additional care, such as hospital monitoring or a blood transfusion, although this is not needed for most infections.

Symptoms related to anaemia may take longer to improve than the infection itself. The worms may be cleared before the body has replaced its iron stores and made enough new red blood cells.

Follow-up may include another blood count or stool test, especially if symptoms continue, anaemia was significant or further exposure is likely. Persistent symptoms do not always mean that treatment failed; another condition may be responsible.

People living in communities with high rates of soil-transmitted worm infections may be offered public health deworming programmes. These programmes reduce illness within a population but do not prevent later reinfection.

Complications

The main complication is chronic blood loss from the intestine. Over time, this can cause iron-deficiency anaemia and, in heavier infections, loss of protein.

Severe anaemia can place extra strain on the heart and lungs. It may cause marked weakness, breathlessness, a rapid heartbeat or fainting. People who already have heart or lung conditions may notice more pronounced symptoms.

In children, long-lasting infection and poor nutrition can affect physical growth, activity and learning. Treating both the infection and any nutritional deficiency is important.

Anaemia during pregnancy can affect the pregnant person's health and may add to the risks already associated with low iron levels. If you are pregnant or could be pregnant, seek medical advice before taking antiparasitic medicine.

Serious intestinal complications are uncommon, but very heavy worm burdens can occasionally cause significant inflammation or bleeding.

Prevention

There is no widely available vaccine against hookworm. Infection can often be prevented by reducing contact with contaminated soil and improving sanitation.

Useful precautions include:

Treating infected people helps reduce the number of eggs entering the environment. Community access to toilets, clean water and health services is also important.

Regular veterinary care and safe disposal of pet waste can reduce exposure to dog and cat hookworms. This mainly helps prevent hookworm-related skin rashes rather than the usual human intestinal infection.

- Wear shoes outdoors in places where human waste may contaminate soil
- Avoid sitting or lying directly on potentially contaminated ground
- Use toilets and safe sewage systems rather than defecating outdoors
- Wash your hands after soil contact and before preparing or eating food
- Wash produce that may have touched contaminated soil
- Use a clean barrier, such as a towel, when sitting on sand or soil

Living with it and what to expect

Most people recover after appropriate treatment. Stomach symptoms and skin irritation may settle relatively quickly, while tiredness from anaemia may improve over weeks or months as iron levels and red blood cells recover.

A past infection does not usually cause permanent intestinal damage. Long-term problems are more likely when infection is heavy, treatment is delayed, nutrition is poor or exposure continues.

If you live in or regularly visit an area where hookworm is common, reinfection remains possible. Wearing footwear and using safe sanitation can lower the risk, but these steps may be difficult where community infrastructure is limited.

Keep any planned follow-up if you had anaemia, significant symptoms or a positive stool test after treatment. Follow-up is routine and does not mean that a serious problem is expected. It

helps confirm that your blood count is recovering and that no further treatment is needed.

When to get medical help

Arrange a routine medical appointment if you have persistent stomach symptoms, an unexplained itchy rash after soil exposure, unusual tiredness or signs of anaemia. Mention recent travel, where you have lived and whether your bare skin contacted soil.

Seek prompt medical advice if:

Black stool can also occur with iron supplements, but it should not automatically be assumed to be harmless.

Get emergency help for chest pain, fainting, confusion, severe weakness or trouble breathing at rest. These symptoms can occur with severe anaemia or another urgent condition. Do not wait for a stool test before seeking emergency care.

- You are pregnant and may have been exposed
- A child has ongoing symptoms, poor weight gain or unusual tiredness
- You have increasing breathlessness or a fast heartbeat
- Symptoms continue after treatment
- You notice blood in your stool or black, tar-like stool

Common questions

Can hookworm go away on its own?

Adult worms may eventually die, but some species can survive in the intestine for years. During that time, ongoing blood loss may cause anaemia. Treatment clears the infection more reliably and reduces the risk of complications.

Can I catch hookworm from another person?

Direct person-to-person spread is not usual. Hookworm eggs leave the body in stool and must develop in suitable soil before they can infect someone else. Poor sanitation allows this cycle to continue.

Can hookworms come through my feet?

Yes. Infectious larvae can penetrate bare skin, often through the feet. You may notice an itchy rash where they entered, although some people have no visible skin reaction.

Can I see hookworms in my stool?

Usually not. Adult hookworms are small and remain attached to the intestinal lining. Their microscopic eggs are detected through laboratory stool testing.

Can my dog or cat give me intestinal hookworm?

Hookworms from dogs and cats more often cause an itchy, winding skin rash called cutaneous larva migrans. Human intestinal hookworm usually comes from soil contaminated with stool from an infected person. Safe pet-waste disposal and veterinary care still reduce exposure.

Can hookworm infection come back after treatment?

Yes. Antiparasitic medicine can clear the current infection, but it does not provide lasting protection. Another exposure to contaminated soil can cause reinfection.

Sources

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