CONDITION

Polyarteritis nodosa

Polyarteritis nodosa is inflammation of medium-sized arteries that can reduce blood flow to organs and nerves.

WHAT IT IS
Inflammation of medium-sized arteries

BODY SYSTEM
Blood vessels, skin, nerves, kidneys, and digestive system

MAIN SYMPTOMS
Abdominal pain, skin changes, nerve weakness, fatigue

WHAT CAUSES IT
Usually unknown immune inflammation; sometimes hepatitis B

HOW IT IS DIAGNOSED
Affected-tissue biopsy or artery imaging

MAIN TREATMENT
Corticosteroids and other immune-suppressing medicines

CAN IT BE CURED?
No - treatment can achieve lasting remission

IS IT AN EMERGENCY?
Sometimes - sudden severe abdominal pain or stroke symptoms

LONG-TERM OUTLOOK
Often good with treatment; organ damage worsens outlook

Overview

Polyarteritis nodosa, often shortened to PAN, is a type of vasculitis. Vasculitis means inflammation of blood vessels. PAN mainly affects medium-sized arteries, which carry oxygen-rich blood from the heart to tissues and organs.

Inflamed arteries may become narrowed, blocked, or weakened. This can reduce blood flow or cause small bulges called aneurysms. PAN can affect arteries supplying the skin, nerves, muscles, digestive system, kidneys, and heart. It usually does not directly inflame the lungs or the tiny filtering blood vessels inside the kidneys.

PAN can range from limited skin symptoms to serious organ problems. Early treatment matters because restoring control of inflammation can prevent further damage. Treatment often brings the condition into remission, meaning there are no active signs or symptoms,

although follow-up is still needed.

Symptoms

Symptoms depend on which arteries are affected. They may begin gradually or appear over a shorter period. General symptoms can include tiredness, fever, reduced appetite, unplanned weight loss, and aching muscles or joints.

Nerve symptoms are common. Reduced blood flow to a nerve can cause burning pain, numbness, tingling, or weakness. Symptoms may be uneven, such as a weak foot or wrist on one side. This pattern is sometimes called mononeuritis multiplex, meaning damage to several separate nerves.

Other possible symptoms include:

Not everyone has all these symptoms. Many are also caused by more common conditions, so symptoms alone cannot confirm PAN.

- Mottled, purple, net-like skin called livedo reticularis
- Tender lumps under the skin, ulcers, or areas of damaged skin
- Abdominal pain, sometimes worse after eating
- Nausea, vomiting, or blood in the stool
- Muscle pain, especially in the calves
- High blood pressure or reduced kidney function
- Chest pain if arteries supplying the heart are affected
- Pain or tenderness in a testicle

Causes and risk factors

In most people, the exact cause is unknown. The immune system, which normally protects against infection, causes damaging inflammation in artery walls. PAN is not usually inherited, and it is not contagious.

Some cases are linked to hepatitis B, a viral infection of the liver. Hepatitis C and certain other infections have also been reported, but these links are less typical. Testing for hepatitis is important because infection-related PAN needs a different treatment approach.

Rare inherited conditions can cause PAN-like blood vessel inflammation. One example is

deficiency of adenosine deaminase 2, known as DADA2. It is more likely to be considered when symptoms begin in childhood, affect several relatives, or include early strokes or unusual blood problems.

Having hepatitis B does not mean that someone will develop PAN. Likewise, most people with PAN do not have hepatitis B.

Diagnosis

There is no single blood test that proves you have PAN. Diagnosis usually combines your symptoms, a physical examination, laboratory tests, imaging, and sometimes a biopsy.

Blood tests may show inflammation, anemia, or changes in kidney or liver function. Urine testing helps assess the kidneys and look for another type of vasculitis. Tests for hepatitis B, hepatitis C, and HIV may be offered because these infections can affect treatment choices.

A blood test called ANCA is often used when vasculitis is suspected. PAN is not usually associated with ANCA. A negative result does not confirm PAN, but the result may help distinguish it from other conditions.

Tests that can confirm or strongly support the diagnosis include:

Angiography may use CT, MRI, or a thin catheter placed into an artery. The most suitable test depends on the organs involved. A biopsy is most useful when tissue can be taken safely from an area that appears affected.

Other conditions can resemble PAN, including infections, cholesterol blockages, blood-clotting problems, medication reactions, and other forms of vasculitis. Ruling out these possibilities is an important part of diagnosis.

- Biopsy: A small sample of affected skin, muscle, nerve, or another tissue is examined for inflamed and damaged arteries
- Angiography: Imaging of the arteries may show narrowing, blockages, or small aneurysms typical of PAN

Treatment and management

Treatment aims to stop artery inflammation, protect blood flow, and prevent permanent organ damage. The plan is based mainly on which organs are affected and how severe the condition is.

Corticosteroids like prednisone or hydrocortisone , often called steroids, are commonly used

to bring inflammation under control. They are different from anabolic steroids used to build muscle. When PAN threatens an organ or causes serious nerve, digestive, kidney, or heart problems, another medicine that suppresses the immune system is usually added. Cyclophosphamide is one option used for severe PAN.

People without immediately threatening organ involvement may receive a steroid together with another immune-suppressing medicine, such as azathioprine or methotrexate. Once inflammation is controlled, treatment may be changed to a maintenance medicine intended to keep PAN in remission. Medicines are usually reduced gradually rather than stopped suddenly.

If PAN is related to hepatitis B, antiviral treatment is central. Specialists may also use a shorter course of steroids and, in selected cases, plasma exchange, which removes certain proteins from the blood. Prolonged immune suppression can allow hepatitis B to worsen, so this situation needs coordinated specialist care.

Management may also include treatment for high blood pressure, pain, nerve problems, or damaged skin. Surgery or an artery procedure may be needed for a ruptured aneurysm, severely reduced blood supply, or injured bowel, but these procedures do not treat the underlying inflammation.

Follow-up generally includes blood pressure checks, blood and urine tests, symptom reviews, and monitoring for medicine side effects. Immune-suppressing treatments can increase infection risk. Some can also affect bones, blood counts, fertility, the liver, kidneys, or bladder. The monitoring needed depends on the medicine being used.

Complications

PAN can cause lasting damage when an artery becomes blocked or ruptures. Possible complications include:

Treatment also has risks, particularly infection and the longer-term effects of corticosteroids. Regular monitoring helps identify these problems early. Controlling inflammation promptly lowers the chance of new artery damage, although existing nerve or organ damage may not fully reverse.

- Permanent numbness, pain, or muscle weakness from nerve injury
- Bowel damage, bleeding, or a hole in the bowel wall
- Kidney impairment and difficult-to-control high blood pressure
- Heart injury or, less often, stroke

- Skin ulcers, scarring, or tissue loss
- Internal bleeding from a ruptured aneurysm

Prevention

Most cases of PAN cannot be prevented because their cause is unknown. There is no screening test that predicts who will develop the condition.

Vaccination against hepatitis B reduces the risk of hepatitis B infection and therefore prevents PAN cases linked to that infection. Avoiding shared needles and using measures that reduce exposure to blood and sexual transmission also lower hepatitis B risk.

After diagnosis, taking treatment as agreed and attending monitoring appointments cannot guarantee that PAN will not return. However, these steps can help detect renewed inflammation or treatment complications before they cause greater harm.

Living with it and what to expect

Treatment often has an initial phase to bring inflammation under control, followed by a longer period of lower-intensity treatment. Symptoms such as fever, muscle pain, and skin inflammation may improve as the arteries settle. Nerves heal slowly, so weakness, numbness, or burning pain can take months to improve. Some nerve damage may remain.

Some people have one episode followed by long-term remission. Others have relapses, when inflammation becomes active again. A relapse may cause old symptoms to return or produce new symptoms. New nerve weakness, abdominal pain, skin ulcers, or unexplained general illness should be reported rather than assumed to be part of recovery.

Over the years, care focuses on maintaining remission, controlling blood pressure, managing lasting organ or nerve damage, and reducing medicine side effects. Rehabilitation, physiotherapy, pain support, or mobility aids may help if nerve or muscle damage affects daily activities.

Many people return to work, exercise, and usual family activities once PAN is controlled. The pace of recovery differs, particularly after severe organ involvement. Even during remission, planned follow-up remains important because blood pressure changes, medicine effects, or relapse may not be obvious at first.

When to get medical help

Call emergency services for symptoms that could mean sudden loss of blood flow, major bleeding, stroke, or heart injury. These include:

Seek urgent medical advice for new nerve weakness, worsening abdominal pain after meals, a rapidly spreading skin ulcer, much less urine than usual, or a severe headache with very high blood pressure.

If you take immune-suppressing medicine, seek prompt advice for fever or other signs of infection. The medicine may reduce your body's usual response to infection.

Routine follow-up is the right place to discuss gradual tiredness, stable nerve pain, recovery, work, exercise, vaccination, pregnancy planning, or ongoing medicine side effects. Do not stop corticosteroids or other immune-suppressing medicines suddenly unless you have been told to do so.

- Sudden, severe, or rapidly worsening abdominal, chest, or back pain
- Vomiting blood, passing black stools, or heavy rectal bleeding
- A drooping face, new one-sided weakness, speech difficulty, or confusion
- Fainting, severe breathlessness, or crushing chest pressure
- A limb that suddenly becomes very painful, cold, pale, or weak

Common questions

Is polyarteritis nodosa an autoimmune condition?

It is an immune-mediated condition, meaning the immune system drives inflammation in artery walls. In most cases, it is not clear why this starts. PAN linked to hepatitis B involves an immune reaction associated with the infection.

Is polyarteritis nodosa contagious?

No. You cannot catch PAN from another person. Hepatitis B, which can trigger some cases, can spread through infected blood, sexual contact, or from parent to baby during birth.

Can polyarteritis nodosa affect my kidneys?

Yes. It can reduce blood flow through the arteries supplying the kidneys and can cause high blood pressure or kidney impairment. Unlike some other forms of vasculitis, PAN does not usually inflame the kidneys' tiny filtering units directly.

Will polyarteritis nodosa come back after treatment?

It can. Some people remain in remission for many years, while others have relapses. Follow-up is important even when you feel well. A return of symptoms does not always mean a relapse because infection, medicine effects, and other conditions can feel similar.

Can I exercise with polyarteritis nodosa?

Gentle, gradual activity may help rebuild strength once inflammation is controlled. Nerve weakness, muscle pain, heart involvement, or reduced blood flow can affect what is safe. A rehabilitation or physiotherapy plan may be useful after a severe episode.

Is polyarteritis nodosa cancer?

No. PAN is inflammation of arteries, not cancer. Some symptoms, such as weight loss and tiredness, can occur with many conditions, which is why testing is needed rather than relying on symptoms alone.

Sources

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