What we tell our patients about vasculitis

Gemma Browne MB MRCPI
Neil Turner PhD FRCP Department of Renal Medicine Royal Infirmary Edinburgh

Vasculitis is inflammation of the blood vessels. Its effects depend upon the size of the blood vessels affected and the parts of the body involved.

Commonly, vasculitis may only affect the skin (cutaneous vasculitis – Figure 1). Sometimes it affects several organs at the same time (systemic vasculitis). There are many varieties of systemic vasculitis, and they are often given complicated names (Figure 2 and Table 1). However, it is useful to be aware of this variety, as treatments may differ and some kinds of vasculitis are more likely to recur. Some types of systemic vasculitis begin by affecting a single organ such as the kidney.

Some types of systemic vasculitis begin by affecting a single organ such as the kidney

What causes vasculitis?

The causes of the onset of vasculitis are not always clear. It is not a hereditary disease. Sometimes it occurs as an allergic reaction (for example, to medication) or some types may be caused by infection – for instance, with hepatitis viruses and some bacteria.

Symptoms of vasculitis

Cutaneous vasculitis causes a skin rash and, sometimes, pain (Figure 1). Systemic vasculitis commonly causes general symptoms, such as feeling unwell, weight loss, night sweats and joint pains. Its onset may be sudden and dramatic, but it usually comes on gradually, over days and weeks.

Any organ may be affected. When vasculitis affects the kidney, blood and protein can appear in the urine, but this may only be demonstrated by urine testing. There are few obvious symptoms of kidney failure until a great deal of damage has been done. Disease in the lungs may cause breathlessness and a cough, and occasionally bleeding which causes the patient to cough up blood. Weakness and numbness of the hands and feet may be caused by inflammation of the tiny blood vessels supplying the nerves. Abdominal pain and bleeding may result from vasculitis in the gut, and this may occasionally lead to severe bleeding or bowel perforation. Vasculitis in the heart may result in symptoms similar to a heart attack, while in the brain it may cause confusion, the symptoms of a stroke or fits.

How is vasculitis diagnosed?

When the onset of vasculitis is slow, it is almost inevitable that correct diagnosis is delayed, as the early symptoms closely resemble influenza or other infections or illnesses. Routine blood tests are also rarely abnormal in the early stages.

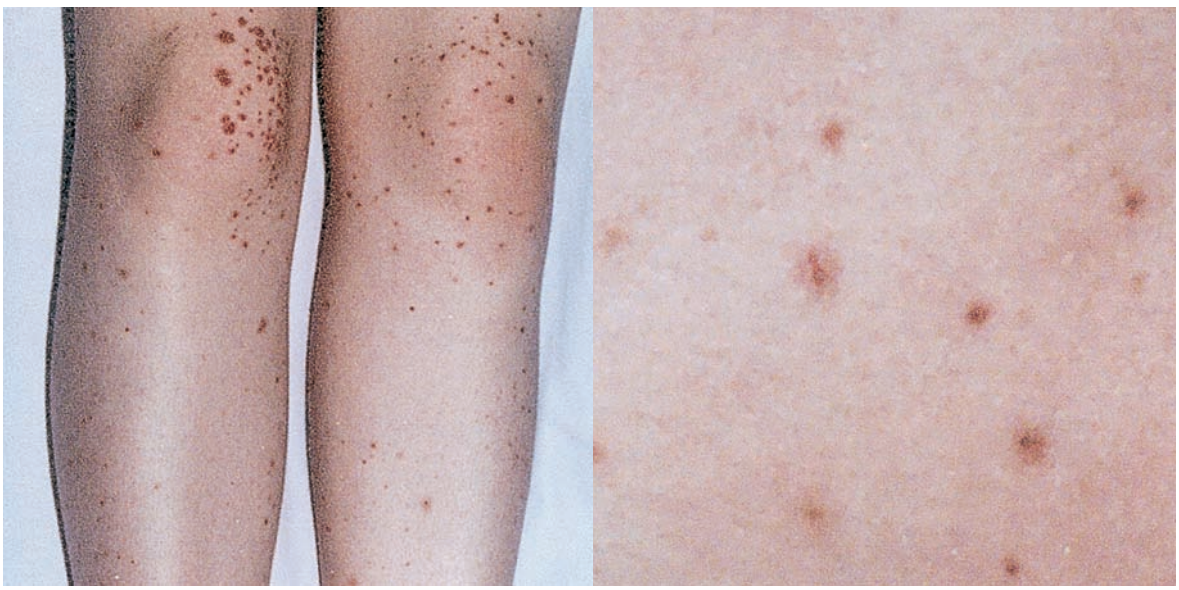
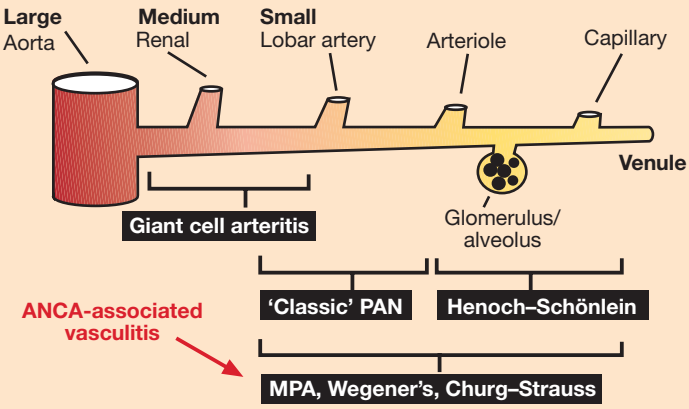


Figure 1. The legs of a patient with Henoch–Schönlein purpura vasculitis affecting the skin

Anaemia is common, and there may be signs that suggest infection or inflammation.

In some types of severe vasculitis, tests for antineutrophil cytoplasmic antibodies (ANCA) may help, although alone they do not prove the diagnosis. Microscopic examination of a biopsy sample from an affected part of the body is often required to confirm the diagnosis. Kidney biopsies are particularly helpful if there are signs of kidney involvement. A special type of X-ray, known as an angiogram, can sometimes diagnose vasculitis when it affects large blood vessels.

Figure 2. Types of vasculitis



What types of vasculitis affect the kidney?

The kidney is particularly prone to small vessel vasculitis (SVV), which may involve the tiny blood vessels in the filtering units of the kidney. Inflammation of these filters, glomerulonephritis, is a common cause of a severe but treatable kidney disease called crescentic nephritis – so-called because of its appearance under the microscope (Figure 3). This is also called rapidly progressive glomerulonephritis (RPGN) because of the speed with which it can cause kidney failure.

SVV affecting the kidney is usually caused by one of two types of vasculitis – microscopic polyarteritis (MPA) or Wegener's disease. The appearance of these two diseases in the kidney is usually identical, but if other organs are affected this may help to distinguish one disease from the other. ANCA may also assist in the diagnosis of SVV. The treatment of the resulting severe kidney disease is identical in both cases.

Will I need dialysis?

In severe SVV, it is common for dialysis to be required soon after the diagnosis. However, treatment can often heal severe kidney disease, so that dialysis is no longer required, even though some scarring and kidney damage remains.

Table 1. Types of vasculitis

Disease	Blood vessel affected	Remarks
Takayasu's disease (pulseless disease)	Large	Mainly affecting young women from the Far East, this long-term disease is difficult to treat.
Kawasaki disease	Large	Affects children, possibly after an infection. Heart arteries are especially vulnerable. Steroid treatment is harmful. Responds to intravenous immunoglobulin.
Polyarteritis nodosa (PAN)	Large/medium	Rare, but quite well-known as it is the 'earliest' vasculitis.
Temporal arteritis (giant cell arteritis)	Medium	Common in the over-60s, this causes headache and general illness, sometimes with other symptoms. Responds to steroids alone.
Churg–Strauss syndrome	Medium/small	Disease of over-50s, often with late-onset asthma. Affects particularly lung and nerves to arms and legs. ANCA usually present.
Microscopic polyarteritis (MPA)	Small	Affects all ages but more common in elderly. Kidneys, skin and gut affected. ANCA usually present.
Wegener's granulomatosis	Small	Affects all ages and similar to MPA, but may also cause a slower, longer inflammation affecting nose sinuses and lungs. ANCA assessment is useful.
Henoch–Schönlein purpura	Small	Common in children, who usually get a rash, abdominal pain (gut vasculitis) and mild kidney involvement. Often more severe in adults. ANCA-negative.

YOAV LEVY/PHOTOTAKE NYC/ROBERT HARDING

An angiogram can sometimes diagnose vasculitis when it affects large blood vessels

What are ANCA?

Antibodies are infection-fighting molecules found in the bloodstream. They target foreign molecules and are often found in the blood of patients with SVV. ANCA stick to molecules found in white blood cells rather than to foreign material. It is not clear whether ANCA cause vasculitis, but they can be helpful in its diagnosis. Unfortunately, similar antibodies may be found in other diseases, and not all vasculitis may be ANCA-positive, so the test is not 100% reliable.

What are the treatments?

Severe types of systemic vasculitis often require powerful treatments to suppress the inflammation and the powerful immune response. Treatments may include steroids, cyclophosphamide, azathioprine and plasma exchange.

Steroids

Steroids (usually prednisolone) are useful and most patients need to receive them. Large doses of these drugs taken over a long period of time can, however, result in a long and well-known list of side-effects, including:

- Weight gain and fluid retention
- Diabetes, in some patients
- Thinning of bones (osteoporosis)
- Thinning of skin and easy bruising
- Risk of serious infections.

Doses are reduced as soon as possible because of these side-effects, but no alternative agent has yet been developed that can completely replace the use of steroids. Table 2 (overleaf) summarises a few of the measures that can be taken to counteract some of the potential side-effects of steroids.

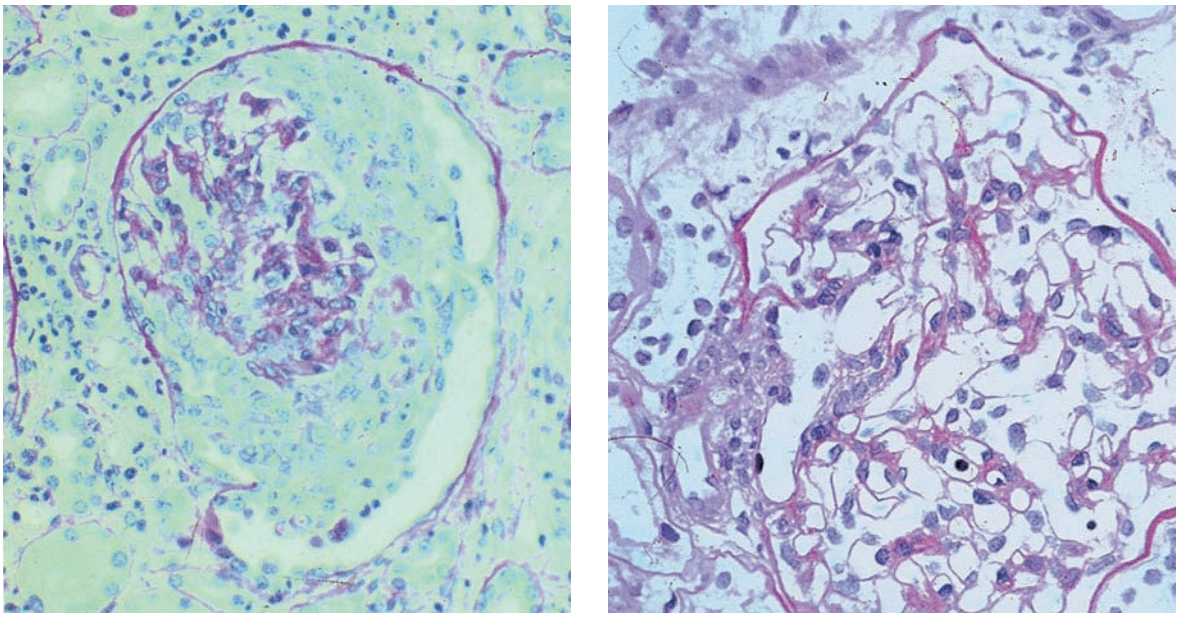


Figure 3. Left, normal glomerulus and, right, one affected by crescentic nephritis. There are a million glomeruli in a human kidney. When vasculitis occurs, it affects many glomeruli in both kidneys

Table 2. Countering the side-effects of steroids

- Bone loss during steroid treatment may be offset by using calcium and vitamin D
- Hormone replacement therapy may help in women
- Other treatments may be required if osteo - porosis is already proven

Cyclophosphamide

This is a powerful drug that attacks white blood cells. It has proved to be especially effective in several types of vasculitis that were often fatal in the past. However, this drug has some serious side-effects – as listed below.

- Serious infections and bleeding – blood count must be checked as a preventive measure.
- Bladder toxicity may cause cystitis and bleeding.
- It may lead to infertility in men through toxic effects of the drug on the testes (usually following prolonged treatment, for example, over six months).
- In women it may cause infertility and premature menopause through toxic effects on the ovaries (usually after prolonged treatment).
- It is toxic to unborn babies.
- There is some increased risk of bladder cancer in later life.
- There is an increased risk of leukaemia in later life.

Keeping the courses short (three months) reduces the risk of toxic effects from cyclophosphamide. Administering it in the form of an injection every two to four weeks, rather than as a daily dose by mouth, can also keep the total dose down.

Azathioprine

This drug has similar effects to cyclophosphamide on white blood cells but is less powerful and generally safer. It does not affect fertility or the bladder, and has been used safely in pregnancy. Azathioprine must be monitored with blood counts and has an increased risk of infection. It is often used after a course of cyclophosphamide in severe vasculitis, or at the outset in mild vasculitis.

Other drugs

Other drugs that are occasionally used in vasculitis include methotrexate, mycophenolate mofetil and anti-white blood cell antibodies such as antihuman thymocyte globulin (ATG) or Campath. IVIG (intravenous immunoglobulin) is an injection of mixed antibodies collected from blood donors. It is only of proven benefit in Kawasaki disease, although it helps a number of other 'autoimmune' conditions where antibodies attack parts of the body.

Plasma exchange

This is a treatment in which a volume of plasma is removed and discarded and replaced by a plasma substitute taken from blood donors. It involves pumping blood through a machine for between one and two hours, and is usually given every day and then on alternate days for a short period. It is most useful during severe disease before other treatments have had time to work and is not usually effective on its own ■

Further information

- ✔ Wegener's granulomatosis UK (www.btinternet.com/wegenersUK) gives patient information and allows patients to introduce themselves and their experiences.
- ✔ WGSG is an international support group for vasculitis sufferers (WGSG org/inc.international), at PO Box 28660, Kansas City, MO 64188–8660, USA (phone: 816 436 8211; email wgsg.@wgsg.org).
- ✔ Johns Hopkins Vasculitis Centre (www.vasculitis.med.jhu.edu.htm). The website provides in-depth explanations; however, the illustrations are quite graphic.
- ✔ There are links to other vasculitis web pages at www.vasculitis.org/links.shtm

Key points

- **Vasculitis is a rare condition causing inflammation of the blood vessels.**
- **Renal vasculitis is caused by small vessel inflammation, but other organs may be affected.**
- **Kidney disease caused by vasculitis may not produce symptoms until there is significant damage.**
- **ANCA are antibodies to white blood cells that may help in diagnosis.**
- **Vasculitis is treatable. Most types respond to powerful treatments that suppress the immune response.**
- **Some of the drugs may have side-effects, but counter measures can be taken against them.**