

# Wound detectives: Can you solve the case?

Welcome to 'Wound detectives', where Joy Tickle shares a real-world case presentation and asks whether you can diagnose and treat the patient. What do you think is the cause of the wound, what tests would you order to confirm your diagnosis and what treatment would you provide?

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A 78-year-old gentleman named Barry contacted his GP with a history of a sudden onset of ulceration to his left lower limb with no recall of any trauma to this area. The GP arranged for him to be assessed by the practice nurse in the leg ulcer clinic.

The nurse undertook a holistic patient assessment. Barry had hypertension, congestive cardiac failure, angina, and hyperthyroidism. Medication included Bricanyl, Duoresp, GTN, paracetamol, cosmocol, salivix pastilles, alfacalcidol, aspirin, candesartan, digoxin, frusemide, levothyroxine, lansoprazole and Nicorandil.

A wound assessment and vascular assessment were also performed. His ABPI following doppler was 1.1 mmhg and his pedal pulses were palpable and biphasic. His limb and foot were well perfused and warm to the touch.

The assessment identified a circumferential lower limb wound with a wound bed displaying a combination of slough, friable granulation tissue and there was an accompanying purple rash/dyscolouration to his skin (Figure 1).

The wound was extremely painful, and his pain score was 9 (visual analogue scale 1–10). He informed the practice nurse that the



**Figure 1. Patients wound with a purple rash/dyscolouration**

wound appeared suddenly and that he had no previous history of ulcerations or underlying conditions pertaining to his limb. The wound was negatively impacting upon his quality of life, mobility was now becoming difficult, and he was becoming increasingly dependent upon his wife and family to help with everyday activities. He was finding it very difficult to rest and sleep and was becoming increasingly anxious as the wound was deteriorating. He frequently missed meals as he stated the wound pain often left him with no appetite and so had seen a recent loss in weight.

**Question 4**

**What were Barry's signs and symptoms of vasculitis?**

**Question 5**

**Based on the cause and the organs that may be affected by vasculitis what other specialists may be involved in its diagnosis and management?**

**Question 6**

**What is vasculitis and what type of vasculitis does this patient have?**

**Question 7**

**What are the key objectives in managing his wound/skin?**

**Question 8**

**What other advice/support could you offer Barry living with vasculitis.**

**Question 1**

**What do you feel may be the cause of the sudden ulceration?**

**Question 2**

**What further investigations may be considered?**

**Question 3**

**What specialist may the patient be referred to?**

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**Question 1. What do you feel may be the cause of the sudden ulceration?**

**Answer:**

- » Trauma
- » Insect Bite
- » Venous disease
- » Arterial disease
- » Infection
- » Underlying inflammatory condition such as diabetes
- » Skin condition
- » Immunosuppressive disorder.

Due to the unusual appearance of the wounds, its spontaneous occurrence and the uncontrolled pain the practice nurse contacted the tissue viability specialist for advice. The tissue viability specialist visited the following week and reviewed the patient with the practice nurse. She agreed with her that, given Barry's history of sudden onset ulceration and the unusual appearance of the wounds and skin, further investigations were required.

**Question 2. What further investigations may be considered?**

**Answer:**

- » Venous blood tests for full blood count (FBC), urea and electrolytes (U&E), C-reactive protein, erythrocyte sedimentation rate (ESR) and Hba1c
- » Wound swab for microbiology, culture, and sensitivity
- » Wound biopsy
- » Urinalysis particularly to test for blood and protein in case of kidney inflammation
- » ABPI/Doppler test

The results showed that the patients inflammatory markers were extremely elevated, and the wound swab identified a heavy growth of beta haemolytic *Streptococcus*. He began antibiotic therapy as recommended by the microbiology result. In view of Barry's presenting history and recent test results it was agreed that he should be referred to a specialist

to ascertain the true aetiology of the ulceration and skin rash.

**Question 3. What specialist may the patient be referred to?**

**Answer:**

- » Dermatologist
- » Vascular consultant
- » Rheumatologist
- » Diabetologist
- » Tissue Viability.

It was agreed that Barry would be referred to the dermatology service. During his appointment further blood tests were performed to investigate his elevated inflammatory markers and for antibody screening. A tissue biopsy of the wound was also performed to examine the types of cells and assist with diagnosing the wound aetiology (Pekarek et al, 2011; Vasculitis UK, 2022). Based on the patients' symptoms and the results he was diagnosed with a condition called vasculitis.

Vasculitis is a rare condition, and, in most cases, the actual cause is unknown. Recent research suggests that in most cases a genetic or environmental trigger (or a combination of both) may be the cause. It is more common from the age of 50 years old, however young people and infants can be affected (National Heart, Lung, and Blood Institute, 2022).

Vasculitis is a term for a group of rare diseases that cause inflammation of blood vessels. It is thought that vasculitis is an autoimmune disease, which means the body comes under attack by its own immune system. In vasculitis, the immune system attacks blood vessels and surrounding tissue causing inflammation and damage. (Vasculitis UK, 2022). There are many types of vasculitis, and they may vary greatly in symptoms, severity, and duration.

The symptoms of vasculitis vary depending on which type of vasculitis is diagnosed, the organs involved, and whether the condition is life threatening. Some patients may have few symptoms

while others may become extremely ill. Symptoms may develop slowly, over months or extremely quickly over days or weeks.

Vasculitis has a wide range of signs and symptoms which may include:

- » Tiredness
- » Fever
- » General aches and pains
- » Loss of appetite
- » Weight loss
- » Shortness of breath and cough
- » Numbness or weakness in a hand or foot
- » Red spots on the skin ("purpura"), lumps ("nodules") or sores ("ulcers")
- » Unresolving pain (Vasculitis UK, 2022).

**Question 4. What were Barry's signs and symptoms of vasculitis?**

**Answer:**

- » Loss of appetite
- » Weight loss
- » Unresolving pain
- » Sudden onset ulcer
- » Purple rash
- » Tiredness.

It is essential to obtain a diagnosis of vasculitis as early as possible to enable appropriate treatment. Any delay may result in permanent damage. Diagnosis can be problematical for the health professionals as symptoms are often non-specific and often mimic other common conditions. Unfortunately, because of these difficulties diagnosis can be missed or delayed for some time and referrals to appropriate specialist significantly delayed. (Sreih et al, 2021)

A study by Sreih et al (2021) found that 82% of the patients with vasculitis had experienced a delay in diagnosis and referral to the appropriate specialist. They reported that this delay caused a significant negative impact upon their health and quality of life. Furthermore, 55% of the patients reported the delay in diagnosis and treatment lead to their condition worsening, 16% reported losing their employment and 11% reported becoming disabled.

Delays in accurate diagnosis may also be because there are several vasculitis diseases. All of which are characterised as previously mentioned by inflammation of the blood vessels in one or more organ(s) the types of vasculitis include:

- » Anti-glomerular basement membrane disease affecting the blood vessels in the lungs and kidneys
- » Bechet's disease
- » Buerger's disease, affecting blood flow to the arms and legs
- » Central nervous system vasculitis, also called primary angiitis, affects the blood vessels in the central nervous system/or the brain and spinal cord
- » Cogan's syndrome, an autoimmune disorder associated with a particular type of vasculitis that affects the whole body
- » Cryoglobulinaemic vasculitis affects the small blood vessels
- » Eosinophilic granulomatosis with polyangiitis, affects the respiratory tract
- » Giant cell arteritis mostly affects the aorta or its major branches
- » Granulomatosis with polyangiitis affects the nose and throat area, lungs, and kidneys
- » Hypersensitivity vasculitis affects the skin. This condition also is known as allergic vasculitis, cutaneous vasculitis, or leukocytoclastic vasculitis.
- » Hypocomplementemia urticarial vasculitis is associated with swelling in the small blood vessels.
- » Immunoglobulin A (IgA) vasculitis, also known as Henoch-Schönlein purpura, is one of the most common types of vasculitis in children but can also affect adults
- » Kawasaki disease is a rare childhood disease that develops when the walls of the blood vessels throughout the body swell. Kawasaki disease is also known as mucocutaneous lymph node syndrome
- » Microscopic polyangiitis affects small blood vessels
- » Polyarteritis nodosa causes swelling and damage most often to medium-sized arteries. This type of vasculitis

may cause muscle pain or symptoms related to the stomach or intestines like heartburn

- » Takayasu arteritis most often affects the aorta and its branches.
- » Rheumatoid arthritis (RA) secondary vasculitis
- » (Taimen et al, 2020; National Heart, Lung, and Blood Institute, 2022; Vasculitis UK, 2022)

Due to the many different types of vasculitis that may affect certain organs other tests may be required and other specialists be involved. Other investigation that may be required include:

- » A chest X-ray finds to establish if the vasculitis is affecting the lungs/aorta or arteries.
- » Lung function tests
- » Computed tomography (CT) scan looks for signs of granulomatosis (inflammation of the blood vessels)
- » Echocardiography to establish cardiac function
- » A pathergy test to diagnoses Bechet's disease
- » Coronary angiography to examine blood vessels for damage, inflammation, blockages, or aneurysms
- » Positron electron tomography (PET) scan, to detect any inflammation in the blood vessels.

Ultrasound looks for signs of inflammation in the blood vessels or organs. (National Heart, Lung, and Blood Institute, 2022; Vasculitis UK, 2022)

**Question 5. Based on the cause and the organs that may be affected by vasculitis what other specialists may be involved in its diagnosis and management?**

**Answer:**

- » Cardiologists
- » Infectious disease specialists
- » Nephrologists
- » Neurologists
- » Ophthalmologists

- » Pulmonologists
- » Rheumatologists
- » Urologists.

It is crucial that patients are referred to the most appropriate specialist(s), who can assist in treating associated problems connected with the vasculitis such as :

- » Ear and nose problems such as sinus infections, inner ear infections, nasal ulcers, tinnitus, hearing loss, and deafness
- » Eye problems including inflammation, irritation, and pain. Changes in vision and or potential blindness
- » Gastrointestinal tract problems, ulcers to the mouth or stomach. Diarrhoea, and haematemesis
- » Heart palpitations
- » Joint pain
- » Lung problems, including shortness of breath, bleeding within the lung, and haemoptysis
- » Nerve problems, including numbness, tingling, pain, and weakness in various parts of body; loss of strength in the hands and feet; nerve pain in the arms and legs
- » Skin problems such as rashes, purple or red spots or bumps, clusters of small dots, bruises, hives, and irritation. swelling of the palms and soles, hardening, pain, ulcers, and gangrene. Genital ulcers (National Heart, Lung, and Blood Institute, 2022; Vasculitis UK, 2022)

Unfortunately, there is no cure for many of the vasculitis diseases. The aim of treatment is to establish (if possible) the cause in order to control the disease, this is known as remission induction therapy and is followed with remission maintenance therapy in order to keep the disease under control.

Remission induction therapy usually involves a combination of immunosuppressive drugs to control the inflammation. The drugs prescribed will vary according to the specific disease and the severity of the disease. The drugs are commonly high dose steroids and additional treatments with immunosuppressive

medicines, such as cyclosporine and mycophenolate mofetil, which are antibody treatments to suppress or weaken the immune system (Vasculitis UK, 2022).

There are also additional drug therapies may be introduced and may include treatments such as

- » Dual endothelin receptor antagonists block the action of a chemical called endothelin that can reduce blood flow
- » Immunomodulators, such as colchicine, reduce the swelling that causes symptoms
- » Interferon therapy block and reduce swelling
- » Interleukin antagonists reduce swelling by blocking a protein in the body that causes the swelling
- » Intravenous immunoglobulin (IVIG) helps control the body's immune response
- » Monoclonal antibodies suppress the immune system
- » Phosphodiesterase inhibitors increase blood flow
- » Tumor necrosis factor inhibitors suppress the immune system by blocking a protein called tumor necrosis factor alpha.

The dermatologist involved in Barry's treatment believed that his vasculitis was possibly caused by a reaction to his recently prescribed medication nicorandil. For this reason, this was discontinued, and treatment of the vasculitis commenced. High dose corticosteroid therapy was given to assist in reducing the swelling to the blood vessels, alongside non-steroidal anti-inflammatory medication to reduce the swelling and inflammation, and analgesia to relieve the unresolving pain.

**Question 6. What is vasculitis and what type of vasculitis does this patient have?**

**Answer:**

Vasculitis is a term for a group of rare diseases that cause inflammation of blood vessels. It is thought that vasculitis is an autoimmune disease, which means the body comes under attack by its own immune

system. In vasculitis, the immune system attacks blood vessels causing inflammation and damage.

This patient has *hypersensitivity vasculitis*, which is affecting his skin. Also known as allergic vasculitis, because of a reaction to his medication nicorandil.

Barry was also referred to the practice nurse to assess and treat the ulcers to his limb and skin, and to offer advice and support to Barry and his family with living with this disease.

**Question 7. What are the key objectives in managing his wound/skin?**

**Answer:**

- » To promote a moist wound environment to facilitate wound healing
- » Reduce the risk of wound/skin infection, particularly because of the immunosuppressive medication that will increase the patient's risk of infection
- » Promote debridement of the devitalised tissue
- » Dressing regimen must be assist with comfort and be atraumatic on dressing change
- » Treatment must be comfortable and conformable during timely wear time.

- » Promote granulation and epithelialisation thus promoting wound closure
- » Prevent further skin/tissue damage
- » Reduce any limb/wound oedema present.

With the support of the practice nurse and the tissue viability nurse Barry's treatment plan was implemented and involved ensuring:

- » Appropriate wound hygiene and debridement. The wound and periwound were cleansed and debrided with a surfactant and an antimicrobial dressing commenced to reduce the microorganisms and prevent biofilm formation thus reducing the risk of infection (Thompson-McHale, 2015).
- » The choice of primary dressing supported autolysis of the slough and devitalised tissue from the wound bed. By reducing the amount of devitalised tissue, the wound healing process could begin aiding the production of granulation tissue and epithelialisation (Ayello et al 2004; EWMA, 2004)
- » A superabsorbent secondary dressing was implemented to manage the high levels of exudate and to lock the exudate within the dressing and prevent periwound skin damage
- » An emollient was applied to the intact skin



**Figure 2. Delayed wound healing associated with vasculitis**



**Figure 3. Delayed wound healing associated with vasculitis**

to maintain a healthy skin and prevent possible skin damage

- ▶▶ Reduced compression was applied to assist with reducing the limb oedema
- ▶▶ Nutritional and hydration advice was offered to assist with wound healing and restore the patients recent weight loss.

As highlighted vasculitis is a debilitating condition and unfortunately, there is no cure. However, with the correct treatment the condition can go in to remission. Unfortunately delayed wound healing is often associated with vasculitis and despite the promote referral and diagnosis for Barry his wounds took a total of 18 months to completely heal (*Figure 2–3*).

**Question 8. What other advice/support could you offer Barry living with vasculitis.**

**Answer:**

- ▶▶ Offer patient/family access to counselling and support networks such as Vasculitis.org.uk/local vasculitis support groups
- ▶▶ Educate Barry with regards to a good skin care regimen for example by keeping the

skin clean and hydrated. Washing the skin with an emollient to prevent the skin becoming dry and the application of emollients can reduce the incidence of skin tears by 50% (Carville et al, 2014).

- ▶▶ Advise the importance of continuing the remission maintenance therapy and to always attend their follow-up appointments
- ▶▶ Inform the patients the importance of taking the prescribed medication as advised to try to prevent further episodes
- ▶▶ Encourage if necessary that the patient adopts healthy lifestyle changes to treat other conditions such as hypertension and hyperlipidaemia to prevent possible exacerbations of vasculitis.

It is hoped that this episode of wound detectives has given you a better understanding in to recognising the condition vasculitis and will hopefully help you to recognise the various ways in that vasculitis can present clinically and what investigations/referrals are necessary to diagnose this condition. Increasing your awareness

and understanding of vasculitis disorders will mean that patients receive prompt appropriate management of this debilitating and life-threatening condition. **WUK**

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## Writing for Wounds UK

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If you are interested in writing for us and would like to discuss an idea for an article, please contact the Managing Editor, Rachel Webb at [rwebb@omniamed.com](mailto:rwebb@omniamed.com)

