



AKI Case study - Vasculitis

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What is vasculitis

- Vasculitis refers to inflammation of the blood vessels, including arteries, veins and capillaries
- There are many types of vasculitis. Most types of vasculitis are rare, and the causes are generally not known.
- Although vasculitis may be confined to a particular organ, mostly multiple organ systems are involved

Who does it affect?

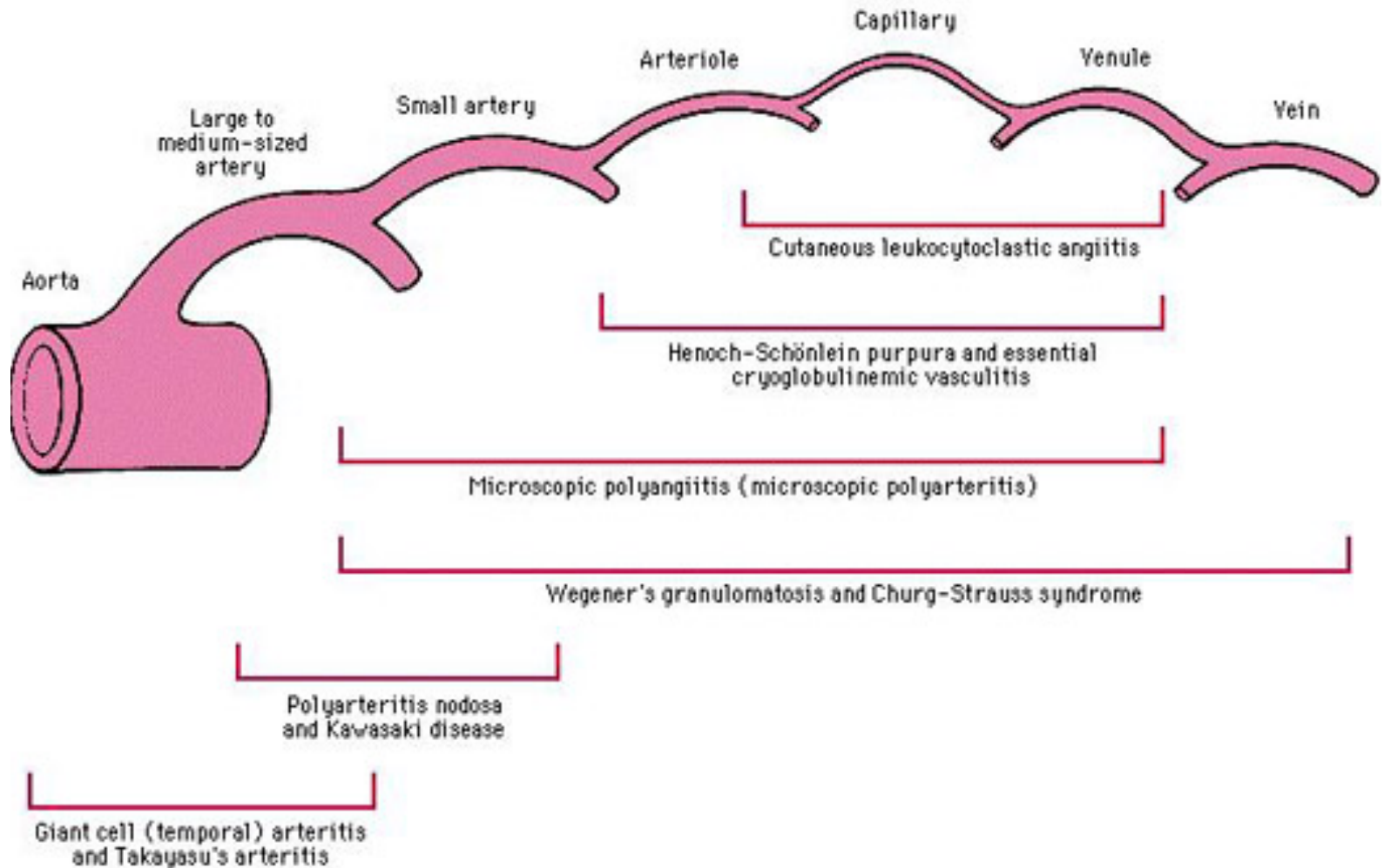
- Vasculitis can affect persons of both sexes and a broad range of ages.
- A few forms of vasculitis affect certain groups of people:
- For instance, some types of vasculitis are more common in children than adults
- However, vasculitis that affects the medium and large arteries usually in the head and neck (giant cell arteritis) occurs only in adults over 50 years old, and is more common in women

Affected body part

- Kidney
- Lungs
- Nerves
- Skin
- Brain
- Joints
- Eyes
- Gastrointestinal Tract (GI)
- Sinus/nose
- Trachea

Types of Vasculitis (by size of arteries affected)

The vasculitic diseases are usually classified according to the predominant size of vessel involved.



Some possible causes of vasculitis

- Genetic factors
- Exposure to chemicals: Cocaine, amphetamines
- Infection: Streptococcus, Staphylococcus, Cytomegalovirus (CMV), Hep B & C
- Medication reaction: Penicillin, Allopurinol, Hydralazine
- Connective tissue disease: Systemic Lupus Erythematosus (SLE) and Rheumatoid arthritis
- Malignancy

Signs and symptoms

- The symptoms of vasculitis include flu-like symptoms such as fever, body aches, rash, joint and muscle pain. There can also be reduced appetite and weight loss.
- Symptoms can appear in the particular body part that is affected by the disease, for example:
 - When it affects the kidney, blood and protein may be present in the urine
 - When it affects the lungs it may cause breathlessness and a cough, and occasionally bleeding causes the patient to cough up blood.

Vasculitis affecting the kidney

- The kidney is likely to be affected by small vessel vasculitis (SVV) which causes Inflammation of the glomeruli, called glomerulonephritis.
- SVV affecting the kidney is usually caused by one of two types of (MPA) and granulomatosis with polyanglitis (GPA) formerly Wegener's disease.

ANCA stands for **Anti-Neutrophil Cytoplasmic Autoantibody**.

- ANCA vasculitis is a type of autoimmune swelling caused by autoantibodies
- ANCAs are autoantibodies that attack the inside (cytoplasm) of a certain type of white blood cells called neutrophils.
- ANCAs can cause neutrophils to attack the capillaries in the glomeruli, causing rapid impairment in renal function
- ANCA can be useful in the diagnosis of SVV

Case study

- Mr Taylor is a 68 year old man who went to his GP complaining of feeling weak and unwell 3/7 ago.
- His GP performed some blood tests and sent him to A&E

Past Medical History

- Long standing hypertension treated with diuretics
- Has had a persistent runny, stuffy nose, cough, loss of appetite and malaise for 3-4 weeks
- Normal renal function (baseline)

Assessment

- **Airway:**
- Patent

Assessment

- **Breathing:**
- Respiration rate: 28bpm
- O₂ saturations 89% on air
- Appears short of breath
- Reports coughing up some fresh blood

Assessment

- **Circulation:**
- BP 130/85mmHg
- HR 125bpm - regular
- Temperature 38.0°C
- CRT > 3 seconds
- Anuric for last 8 hours previously passing dark and sludgy urine – previous urine dipstick +ve to blood and protein
- Mouth dry

Assessment

- **Disability:**
- Alert
- Blood glucose: 5.8 mmol
- No c/o pain

Assessment

- **Exposure:**
- Skin appears dry
- Red spot like rash on lower limbs
- Urinary catheter insitu

Blood gases

- PO_2 ; 8.1 Kpa
- pCO_2 ; 6.0 Kpa
- K^+ ; 6.9 mmol/l
- pH; 7.2
- HCO_3^- ; 12.4 mmol/l

Blood results

- Urea; 35 $\mu\text{mol/l}$
- Cr; 800 $\mu\text{mol/l}$
- K^+ ; 6.2 mmol/l
- Bicarbonate; 12 mmol/l
- Hb; 9.5 g/dl
- WCC; 16
- ANCA positive

Treatment

- **Breathing:**
- High flow oxygen
- Sit up
- Monitor sputum as coughing up blood and send specimen to lab
- Chest Xray

Treatment

- Circulation:
- Give some IV fluids - careful fluid balance as patient c/o SOB
- ECG/cardiac monitor (HDU bed)- hyperkalemia protocol
- Paracetamol
- Stop diuretic

Treatment

- **Disability:**
- Monitor blood glucose due to insulin and dextrose infusion

- **Exposure:**
- Rash – check skin integrity
- Regular pressure area care
- Maintain dignity

Further treatment

- Requires renal referral!
- Possible renal biopsy to confirm diagnosis
- Steroids – reduce inflammation
- Cyclophosphamide – immunosuppressant
- Azathioprine – less powerful and safer than cyclophosphamide
- Plasma Exchange – To remove ANCA from blood
- RRT – CVVH/CVVHDF – to correct uremia/acidosis/electrolyte imbalance and fluid removal

Diagnosis

- Granulomatosis with polyanglitis (GPA) formerly known as Wegener's granulomatosis – SVV
- The cause of GPA is unknown, it appears to develop after an initial inflammation, that triggers an abnormal reaction from your immune system
- It affected Mr Taylor's kidneys and lungs



Any Questions?