** Heterogeneous group of disorders, linked by inflammation within blood vessels wall.

Cause morbidity & mortality

Classified by the size:
- Small vessel [cap. + post cap. venules]
- Medium vessel [muscular arteries + arterioles]
- large vessel [aorta + major branches]

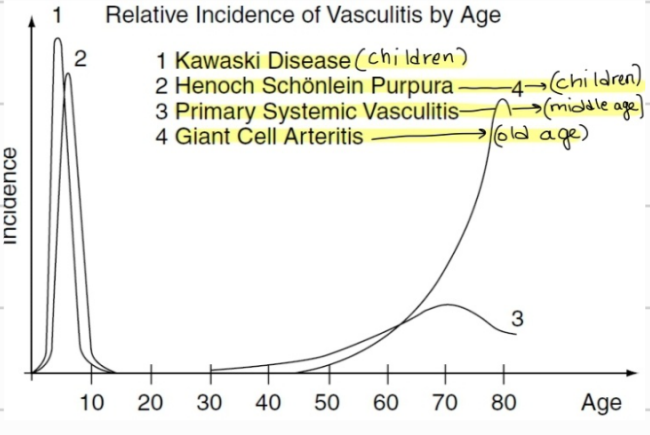
May be Primary or Secondary ⇒
- rheumatoid disease
- infection
- medication
- malignancy

Dominant vessel involved	Primary	Secondary
Large arteries	1. Giant cell arteritis (GCA) 2. Takayasu arteritis (TA)	1. Aortitis associated with RA 2. Infection (e.g., syphilis, tuberculosis)
Medium arteries	1. Classical PAN (polyarteritis nodosa.) 2. Kawasaki disease (pediatrics)	1. Hepatitis B virus associated PAN
Small vessels and medium arteries (ANCA)	1. Wegener's granulomatosis (WG)[a] 2. Churg–Strauss syndrome (CSS)[a] 3. Microscopic polyangiitis[a]	1. Vasculitis secondary to RA, SLE • Sjögren's syndrome • Drugs[b] • Infection (e.g., HIV)
Small vessels (leukocytoclastic)	1. Henoch–Schönlein purpura (HSP) (pediatric) 2. Cutaneous leukocytoclastic angiitis	• Drugs[c] • Infection (MRSA, sepsis) • Hepatitis C • virus induced • cryoglobulinemia

- Drugs that cause vasculitis:-
  - Prescribed: propylthiouracil, Hydralazine, Allopurinol
  - Abuse: cocaine, Heroin, Amphetamine

▷ Epidemiology

- GCA → Scandinavia/ Takayasu → Japan/ ANCA uncommon



▷ Clinical feature

Large (ischemia like symptoms + systemic)	Medium	Small [non-blanchable skin rash on dependable part of body]
Headache	Cutaneous nodules	Purpura - due to extravasation of RBC at inflammation site
Limb claudication → Bad Fatigue when limb used (vascular)	Ulcers	Vesiculobullous lesions
Asymmetric blood pressures [vessel with vasculitis slightly hypertensive]	abdominal pain (mesenteric vasculitis)	Urticaria
Absence of pulses	Livedo reticularis	Glomerulonephritis (kidney capillaries)
Bruits (carotid, axillary, antecubital, renal, aorta)	Digital gangrene	Alveolar hemorrhage (lung capillaries)
Aortic dilatation and dissection	Mononeuritis multiple	Cutaneous extravascular necrotizing granulomas
	Microaneurysms	• Splinter hemorrhages
		• Scleritis/episcleritis/uveitis
		• epistaxis in nose, crusting and sinus inflammation

✱ common to all sizes :-

Fever / malaise / loss weight / arthritis

✱ ↑ESR / sever anemia / Thrombocytosis

1 large vessel vasculitis

a. Giant cell arteritis

- Age elderly >50
- Headache < Temporal / occipital ← new onset, unlike any
- scalp tenderness
- Temproal a. → thickened, nodular, tender, Absent pulse
- jaw claudication → internal maxillary a. ischemia
- Tingling tongue → lingual a. ischemia
- Amaurosis fugax (blurred vision) ⇒ unilateral permenat loss of vision → ophthalmic & post. ciliary a.

Diagnosis

1) Normocytic anemia
2) ↑ ESR & CRP
3) Temporal a. biopsy (skip lessions common)

Treatment

Steriods

Association

polymylagia rhumatica [pain & stiff < shoulders / Hip, worse in morning]

b. Takayasu's Arteritis (aortic arch syndrom)

- young people <40
- F x 9 > M
- stenosis / occlusion / aneurysm formation
- 3 phases → systemic : fatigue, wight loss, night sweats, fever
  → Vascular : asymmetry of pulses / claudication / visual
  → Burnt-out pulsless

Examination >>

✓ Absent pulse ✓ Bruits ✓ HTN ✓ Asymmety blood prussum ✓ carotidynia

Radiology >> (18F-FDG-PET)

Treatment >> High dose oral predisolone (.5-1mg/Kg) / Surgery (significat stenosis)

	Clinical presentation	Diagnostic clues	Treatment
Giant cell arteritis	• Elderly women, typically > **50 years** • Visual impairment may result in **blindness**. • New-onset headache • Tender temporal artery • Jaw claudication • Associated with polymyalgia rheumatica	• ↑ **ESR** • Autoantibodies absent • Halo sign around the vessel on duplex sonography • Temporal artery biopsy (gold standard) shows **granulomatous inflammation** with giant cells and intima proliferation that results in stenosis.	• High-dose glucocorticoids to prevent permanent vision loss
Takayasu arteritis	• Asian females, typically < **40 years** • Disparity in blood pressure between arms ("**pulseless disease**") • Bruit over the subclavian artery or abdominal aorta • Syncope and **angina pectoris**	• ↑ **ESR** • Angiography shows stenosis of aortic arch and proximal great vessels (gold standard). • Biopsy shows granulomatous inflammation of the aorta and its major branches.	• Glucocorticoids

Small vessels.

2 ANCA association vasculitides

- Ab against azurophilic granules in neutrophils

2 Types → cANCA against proteinase 3 [specific for wegener]

→ pANCA against myeloperoxidase [CSS & MPA]

(+) {elastase / lactoferrin / cathepsin G}

1- Microscopic Poly-angiitis (MPA) ~ pANCA vs MPO

- presents with → renal disease => glomeuronephritis/protinurea/hematuria
  - palpable purpura ← skin
  - pulmonary => SOB / alveolar hemmorhage / hemoptysis

(renal + Pulmonary + skin / nasopharynx not affected)

2- Granulomatosis with poly-angiitis (GPA) => Wegner's ~ cANCN proteinase vs

- Affect upper airways [sinusitis, nasal collapse epistaxis] + Kidy + lung + GI + neuro [foot drop] + eye [scleritis, proptosis, visual loss]

  # saddle nose in wegner # exothalmos

3- Eosinophilic granulomatosis with poly-angiitis (EGPA) => Churg-Strauss

~ pANCA vs MPO

- lungs & skin
- History of reccurat asthma & esoinophilia / cardic involvent.
- 3 phases →
  - prodromal (asthma & allergic rhinitis & nasal polyposis)
  - Eosinophilic (peripheral blood esonophilia / eso tissue infiltration)
  - Vasculitis (sever, happens several years after prodromal. malaise / lethargy / wight loss / fever).

#Treatment of ANCA

- Indication: IV steriods ⊕ IV cyclophosphamide or rituximab
- maintenace: oral steriods ⊕ oral MTX or azathioprine

	Clinical presentation	Diagnostic clues	Treatment
Granulomatosis with polyangiitis (Wegener)	• 35–55 years; ♂ > ♀ • Nasopharyngeal involvement: chronic sinusitis/rhinitis, saddle nose deformity • Chronic otitis media and mastoiditis • Treatment-resistant, pneumonia-like symptoms with cough, dyspnea, hemoptysis • Rapid progressive glomerulonephritis	• **PR3-ANCA/cANCA**-associated • Biopsy shows granulomatous, necrotizing inflammation of vessels, kidneys, and the lungs. • Chest x-ray/CT: multiple bilateral cavitating nodular lesions	• Glucocorticoids, cyclophosphamide
Eosinophilic granulomatosis with polyangiitis (Churg-Strauss)	• Severe **allergic asthma, sinusitis** • Skin manifestations (e.g., tender nodules) • Peripheral neuropathy • Gastrointestinal, cardiac, renal involvement possible	• **MPO-ANCA/p-ANCA**-associated • Peripheral blood **eosinophilia** • ↑ **IgE** • Biopsy (confirmatory test): tissue eosinophilia and necrotizing granulomas	• Glucocorticoids, cyclophosphamide
Microscopic polyangiitis	• Hypertension and pauci-immune glomerulonephritis • Palpable purpura	• **MPO-ANCA/p-ANCA**-associated • Similar to granulomatosis with polyangiitis but spares the nasopharynx • Biopsy shows inflammation; **no granulomas**	• Glucocorticoids, cyclophosphamide

[3] Medium vessel vasculitis ← Kawasaki, PAN, Thromboangiitis obliterans

- Polyarteritis nodosa (PAN)

(muscle biopsy shows transmural inflammation)

- Involve muscular + renal + visceral arteries.
- No lung. No ANCA association
- Hepatitis B in 10-30%.
- Clinical manifestations ⇒ systematic + HTN + Skin rash

  # Digital tip infarction # livedo reticularis

  # Diagnostic ⇒ kidney with microaneurysms.

  # Mononuritis multiplex ← Telengectasia, foot drop.

Small vessels

Non-ANCA vasculitis ← HSP-IgA / cryoglobinemic / cutaneous small vessels vasculitis

a. Hypersensivity vasculitis (Henoch-schonlein purpura / IgA vasculitis)

- primary or secondary → Autoimmune / drug / allergy / infection.

=> vasculitis with IgA-dominant immune deposits

- age < 20 years (majority < 10) → the most common vasculitis in children.
- follows upper respiratory infection
- Involve alternate complement
- Clinical feature → purpuric rash on legs / buttocks
  - colicky abd. pain (intussusception)
  - Melena
  - Arthralgia
  - Hematouria, proteinuria (glomerulonephritis)

- Diagnosis: skin biopsy → ① leucocytoclastic vasculitis / ② Immunofluorecene IgA deposits
- Treatment: self-limiting within 2-3 weeks

* Renal failure development more in adults / <5% in children.

b. Cryoglobulinaemia

- Immunoglobulins percipitate at <37°, redissolve on rewarming.
- Affect skin, kidney, nerve
- Investigation => Cryoglobulins / ↑RF / ↓C4 / Hepatitic C serology.
- Clinical feature => Purpura - joint pain - Raynoud - neuropathy - renal
- Treatment => Interferon ∝ ⊕ ribavirin ⊕ rituximab

* plasma exchange for sever cases.

	Clinical presentation	Diagnostic clues	Treatment
Immunoglobulin A vasculitis (Henoch-Schönlein purpura)	• Children; 90% < 10 years • **Palpable purpura** on lower limbs • Arthritis/arthralgia • Intestinal colic • Hematuria due to IgA nephropathy	• Often secondary to upper respiratory tract infections • ↑ **IgA** in serum • Biopsy: leukocytoclastic vasculitis with IgA and C3 immune complex deposition	• Supportive care (e.g., NSAIDs) in mild cases • Glucocorticoids and IV hydration in severe cases
Cryoglobulinemic vasculitis	• Fatigue • Arthralgia • Palpable purpura • Glomerulonephritis	• The majority of cases are secondary to **hepatitis C** infection. • Cryoglobulinemia	• Glucocorticoids; cyclophosphamide in severe cases • Treatment of **hepatitis C** infection (IFN-α, ribavirin)
Cutaneous small vessel vasculitis	• Palpable purpura	• Drug-induced, infections	• Discontinue drug intake

5 Others

Behcet's Disease

Diagnosis clinically

- Affect any vessel - vein sizes.
- HLA-B51 association
- Recurrent oral ulceration (+) 2 of
  - genital ulcer (heal with scar)
  - skin lesions
    - Acneiform
    - erythema nodosum
    - sup. thrombophlebitis
  - Eye lesions
    - Ant. uveitis
    - hypopyon
  - pathergy test (form postule)

(oral ulceration: heal w/o scarring)

PATHERGY: Positive pathergy test, Aphthous mouth ulcers, Thrombosis (arterial and venous), Hemoptysis (pulmonary artery aneurysm), Eye lesions (uveitis, retinal vasculitis), Recurrent Genital ulcers, Young at presentation (3rd decade)

- Vascular manifestations
  - Arterial
    - Aortic aneyrysm
    - carotid "
    - pulmonary "
  - venous
    - Thrombosis
    - DVT
    - VCT
    - cerebral
    - portal v. thrombosis
    - Budd-Chiari
- Nervous system involvment (Bad prognosis!)
- Treatment: depend on manifestations

Behcet disease	• Most common in Turkey, the Middle East, and Japan • **Oral and genital ulcers** • Uveitis • Erythema nodosum	• Positive pathergy skin testing	• Glucocorticoids