Kawasaki Disease (Mucocutaneous Lymph Node Syndrome)

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Lec. 4

Kawasaki disease is an acute febrile illness of infancy and childhood that is associated with an arteritis ***affecting large, medium-sized, and small vessels****.*

Age: young children (80% below the age of 4 years).

It is the leading cause of acquired heart disease in children.

Symptoms: fever, conjunctival and oral erythema and erosion, edema of the hands and feet, erythema of the palms and soles, a rash often with desquamation, and enlargement of cervical lymph nodes .

Mic: Kawasaki disease is PAN-like, but fibrinoid necrosis is usually less prominent in Kawasaki disease than in PAN .

Cause: is uncertain (T-cell and macrophage activation in response to an unknown antigen??).

Wegener granulomatosis

It is a necrotizing vasculitis characterized by the triad of:-

(1).Acute necrotizing granulomas of the upper respiratory tract (ear, nose, sinuses, throat) or the lower respiratory tract (lung) or both.

(2).Necrotizing or granulomatous vasculitis affecting small to medium-sized vessels. (e.g. Capillaries, venules, arterioles, and arteries), most prominent in the lungs and upper airways.

(3).Renal disease in the form of focal necrotizing, often crescentic, glomerulonephritis .

☐ **"Limited" Wegener granulomatosis, patients who do not manifest the full triad (involvement is restricted to the respiratory tract).**

□ **Widespread Wegener granulomatosis affects the eye, skin, and (rarely) other organs like heart, and pulmonary syndrome .**

Pathogenesis of Weneger's granulomatosis.

1. Hypersensitivity reaction (inhaled infectious or other environmental agent).

2. Immunologic mechanism: evidenced by presence of granulomas and dramatic response to immunosuppressive therapy (cell-mediated type).

3. c-ANCA (cytoplasmic – AntiNutrophils Cytoplasmic Antibodies) are present in the serum of 95% of active cases, may participate in disease pathogenesis. c-ANC are used to be a useful marker for disease activity.

Following treatment, a rising titer of c-ANCA suggests a relapse; most patients in remission have a negative test .

Thromboangiitis Obliterans (Buerger Disease).

- ✓ Is characterized by segmental, thrombosing, acute and chronic inflammation of medium-sized and small arteries, principally the tibial and radial arteries and sometimes secondarily extending to veins and nerves of the extremities .

Age: before the age of 35 years in most cases .

Sex: heavy cigarettes smoker men (currently increased in women).

Pathogenesis :

1. Smoking (smoking cause direct endothelial cell toxicity by some tobacco products or hypersensitivity to them), which impaired endothelium-dependent vasodilatation .
2. Anti-endothelial cell antibodies have also been found .
3. Increased prevalence of HLA-A9 and HLA-B5 in these patients.

4. Genetic influences: more common in Israel, Japan, and India than in the United States and Europe .

Morphology of Buerger disease:

Characterized by a

1. Sharply segmental acute and chronic vasculitis of medium-sized and small arteries, predominantly of the upper and lower extremities .

2. Microscopically, acute and chronic inflammation permeates the arterial walls, accompanied by thrombosis of the lumen, which may undergo organization and recanalization .

3. The inflammatory process extends into contiguous veins and nerves (rare with other forms of vasculitis), and in time all three structures become encased in fibrous tissue.

Clinical Features: The early manifestations are a superficial nodular phlebitis, cold sensitivity of the Raynaud type in the hands, and instep claudication.

In contrast to the vascular insufficiency caused by ATH, in Burgers disease the insufficiency tends to be accompanied by severe pain, even at rest, related undoubtedly to the neural involvement .

Chronic ulcerations of the toes, feet, or fingers may appear, perhaps followed in time by frank gangrene.

Abstinence from cigarette smoking in the early stages of the disease often brings dramatic relief from further attacks.

Raynaud disease & Raynaud phenomena

- Raynaud disease refers to paroxysmal pallor or cyanosis of the digits of the hands or feet and, infrequently, the tips of the nose or ears (acral parts).
- Characteristically, the fingers change color in the sequence white-blue-red. Raynaud disease is caused by intense vasospasm of small arteries or arterioles.
- **Age:** principally young, healthy women.
- Structural changes in the arterial walls are absent except late in the course, when intimal thickening can appear .
- **Mechanism:** exaggeration of normal central and local vasomotor responses to cold or emotion.

- **Course:** Raynaud disease is usually benign, but long-standing, chronic cases can result in atrophy of the skin, subcutaneous tissues, and muscles. Ulceration and ischemic gangrene are rare .
- **Raynaud phenomenon** refers to arterial insufficiency of the extremities secondary to the arterial narrowing induced by various conditions, including systemic lupus erythematosus, systemic sclerosis (scleroderma), ATH, or Buerger disease (see earlier) .

Vascular tumors:

Benign tumor

1. **Pyogenic granuloma (pregnancy tumor).**

A form of capillary hemangioma appear as rapidly growing red nodule on the skin, ginjiva or oral mucosa, bleed easily & often ulcerated 3 develop after trauma in gingival of pregnant patient & regress after delivery.

Its histological appearance simulates granulation tissue (proliferating capillaries with chronic inflammatory infiltrate).

2. **Spider telagiactasia:** most frequent in pregnancy & liver cirrhosis where hyperesterinism play a role in both & it is radial array of arterioles about central core.
3. **Hemangioma:** include:

a. Cavernous hemangioma:

- ✓ Arise in blood vessel & lymphatics, often in skin & mucus surface of the body but also in viscera like liver , spleen & rarely the brain in von Hipple Lindau disease.
- ✓ In infants, it is red blue, compressible, spongy lesion 2-3cm in diameter & mostly has little clinical significance (but not regress spontaneously) & may need surgery because may be locally destructive.
- ✓ Those in brain are most threatening since they cause pressure symptoms or rupture.
- ✓ They are vulnerable to traumatic ulceration & bleeding.
- ✓ Visceral hemangioma detected by imaging techniques may be confused with malignant tumors.

2. Capillary hemangioma:

Occur in skin, subcutaneous tissue & mucous membrane of the oral cavity & lips, liver, spleen & kidneys. It is bright red blue lesion, few mm to several cm in diameter, may level with the surface of surrounding tissue or slightly elevated.

3.Juvenile hemangioma (strawberry type) of the skin of the newborn is common 1/200 grow rapidly in the first few months but fades at 1-3 years of age & regress completely in 70-90% of cases.

- ✓ **Capillary hemangioma significant only because they are vulnerable to traumatic ulceration & bleeding**.

4. Glomus tumor: small (less than 1 cm) red blue nodule usually under fingernail & painful to slight pressure, arise from modified SMs of glomus body (arteriovenous structure involve in thermoregulation).

Hemangioedothelioma: intermediate grade between benign hemangioma & malignant angiosarcoma , the vascular channels appear within masses of well differentiated endothelial cells.

Angiosarcoma: composed of anaplastic spindle cells with scattered poorly formed vascular channels, it is larger ,less vascular & more invasive than their malignant counterpart, some tumor cells contain factor VIII related Ag ,it is associated with carcinogens such as arsenic compounds ,polyvinylchloride(used in plastic industries) or thorotrast.

Kaposi sarcoma (KS): several variants:

1. Chronic KS (Classic KS): affect elderly males, red blue inflammatory looking lesion on distal lower extremities & over years become more numerous & nodular but they are asymptomatic & remain localized to skin & subcutaneous tissue.

It may be associated with second malignancy or altered immunity, 1/3 have history of lymphoma.

1. **Lymphadenopathic (endemic or African KS):**

- ✓ Prevalent among Bantus of South Africa, affect young males, skin lesion is sparse but present with lymphadeopathy, occasionally involves viscera & is extremely aggressive.

2. **Transplant associated KS**:

- ✓ In transplant patient with immunosuppression.
- ✓ It is aggressive (fatal) with nodal, mucosal &visceral involvement.

3. **AIDs associated (epidemic) KS:** in 1/3 of AIDs patients can involve LN & viscera & widely spread.

Morphology :

The lesion begins as red to purple macules which are confined to the lower extremities **microscopically** simulate granulation tissue.

With time spread proximally & converted into raised plaques & then nodules which are composed of:

- ✓ Encompressing small vessels with slit like spaces containing raw of red cells.

THANKS