Kawasaki Disease: Clinical Pearls

1. **Epidemiology**

- Approximately 3/4 of children presenting with acute disease are younger than age 5, but Kawasaki disease can occur in older children and rarely in adults, as well.
- Boys outnumber girls 1.3 to 1, and children of Asian ancestry are at highest risk.
- The most concerning potential complication of Kawasaki disease is coronary artery aneurysm, which occurs in about 25% of untreated patients, and can lead to thrombosis or arterial dissection, both of which can cause myocardial infarction.
- With timely treatment, fewer than 5% of children with Kawasaki disease develop aneurysms.

2. **Pathophysiology**

- Kawasaki disease is an acute systemic vasculitis of children.
- The cause of Kawasaki disease is unknown, although most experts believe that Kawasaki disease reflects an immune response to an unknown infectious trigger.
- Kawasaki disease arteritis particularly affects the coronary arteries, and coronary aneurysms are caused by vascular infiltration first of neutrophils, transitioning to large mononuclear cells along with lymphocytes and plasma cells, causing a weakening and dilatation of the vessel walls.

3. **Clinical Features and Diagnostic Criteria**

- The clinical presentation of Kawasaki disease can be remembered by the mnemonic CRASH and burn:
    - C is for conjunctivitis, R is for rash, A is for cervical adenopathy, S is for strawberry tongue, H is for hands and feet, which is to say swelling and erythema of those parts. B is for burn, which is to say fever.
- Oral mucous membrane findings are seen in approximately 90 percent of cases of KD, polymorphous rash in 70 to 90 percent, extremity changes in 50 to 85 percent, ocular changes in >75 percent, and cervical lymphadenopathy in 25 to 70 percent
- The diagnosis of classical Kawasaki disease can be made clinically based on the following criteria:
    - Fever for five or more days and at least four of the five clinical features from the CRASH mnemonic.
    - Conjunctivitis, which is typically bilateral, nonpurulent, and limbic-sparing (i.e., there will be a faint rim of white right around the iris).
    - Rash, which is a polymorphic rash that can be seen on the trunk, extremities, and groin. Most commonly maculopapular, but may also be morbilliform, targetoid, or scarlatiniform, though not vesicular
    - Adenopathy which is cervical and unilateral, with the node being at least 1.5 centimeters in diameter.
    - Strawberry tongue, or erythema of the tongue with prominent papillae, as well as erythema of the oral mucosa and lips.
    - Changes in the hands and feet, which may include swelling and erythema in the acute illness. Periungual desquamation occurs two weeks after fever onset.

- If the child has a fever for greater than or equal to 5 days with two or three of the principal clinical criteria OR if an infant (<6 mo) has a fever for greater than or equal to 7 days without another explanation, the next step is to assess laboratory tests.
    - If the CRP is greater than or equal to 3 mg/dL and/or the ESR is greater than or equal to 40 mm/hr, assess for supplementary labs (see below)
    - If the patient has three or more of those findings or has a positive echocardiogram, treatment should be initiated.
    - In the absence of those features, the patient should be monitored clinically, with repeat laboratory testing if the fever persists.
- A patient with Kawasaki disease is often very irritable and difficult to console.
- In addition to the classic signs and symptoms, they may also have involvement of the musculoskeletal, GI, GU, respiratory, nervous and cardiovascular systems.

4. Evaluation and Management

- All patients with Kawasaki disease should have an echocardiogram to look for coronary aneurysms or dilatation, as well as other potential cardiac complications, such as pericardial effusion, valvular regurgitation, or decreased left ventricular function.
- While laboratory tests aren't necessary for diagnosis, they can be helpful if the diagnosis is not certain.
    - Several abnormalities may be present, including anemia, leukocytosis, thrombocytosis, elevated CRP and ESR, hypoabluminemia, elevated ALT, sterile pyuria, and CSF pleocytosis.
- The mainstays of treatment for Kawasaki disease are intravenous immunoglobulin (IVIG) and aspirin.
    - IVIG, which contains antibodies from donated blood, should ideally be given as a one-time dose within the first 10 days of the illness. It works as an anti-inflammatory to decrease the risk of aneurysms, as well as to lower fever.
    - Moderate to high dose aspirin is often given until the patient has been afebrile for 48 to 72 hours, followed by low dose aspirin for four to six weeks or until aneurysms resolve.
- Those patients who develop a fever after 36 hours post IVIG treatment without another explanation can have refractory Kawasaki disease, and may be retreated with a second dose of IVIG or other anti-inflammatory therapies if Kawasaki disease is still the likely diagnosis.
- Appropriate follow-up for uncomplicated Kawasaki disease includes a repeat echocardiography at one to two weeks and four to six weeks after treatment.
- For patients with coronary artery aneurysms, cardiologic follow-up and treatment, including antithrombotic therapies, are tailored to the severity of coronary involvement. These children require lifelong follow-up.

Reference:

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