



## A Case of Adult Kawasaki Disease

Deqing Li, M.D., PGY1  
 Khwaja S. Alim, M.D., PGY3  
 Kevin Akers, M.D.  
 MAJ Todd Bennett, M.D.  
 MAJ Michael Abel, M.D.

*William Beaumont Army Medical Center*

### BACKGROUND INFORMATION

Kawasaki disease (KD) is an acute febrile illness of unknown etiology that primarily affects children younger than 5 years of age. Adult Kawasaki Disease (AKD) is rare, there were only 57 cases reported from 1967 to June 2003. (1) KD was first described in Japan by Tomisaku Kawasaki in 1967, and the first cases outside of Japan were reported in Hawaii in 1976.

KD is characterized by fever, rash, swelling of the hands and feet, irritation and redness of the whites of the eyes, swollen lymph glands in the neck, and irritation and inflammation of the mouth, lips, and throat. Serious complications of KD include coronary artery dilatations and aneurysms, and KD is a leading cause of acquired heart disease in the United States. The standard treatment with intravenous immunoglobulin and aspirin substantially decreases the development of these coronary artery abnormalities.

### CASE PRESENTATION

This is a 40 year-old female with unremarkable medical history presented with fever, red eye, strawberry tongue, and erythematous rash in her trunk, hands, feet, and buttock for one week. She was seen at ER and treated with antibiotics. She then was admitted for further evaluation.

At admission, her skin rash has become desquamation (see the photography), her left conjunctiva continued to show injection. Her temperature ranged from 98-103 degree, which tended to increase during nighttime and become normal during daytime. WBC stayed high at around 25 to 30k/ul. Both ESR and C-reactive protein increased. Her Alk Phos, GGT, AST, ALT, Total Bilirubin, Direct Bilirubin increased but then gradually decreased, ALT, total bilirubin and direct bilirubin even became normal within one week after admission. However, in the meantime, her platelet increased to over 1 million from 300,000 within one week as the GGT/AST/ALT gradually became normal. Her blood pressure was low at 80/40 mmHg, considering the history of using Tampon before the rash; she was diagnosed with Toxic Shock Syndrome and treated at ICU. With condition became stable, she then transferred to the ward again. Her multiple blood and urine cultures were negative. All HIV, HCV, HBV, Lyme, WNV, Brucella, Bartonella were negative. Echocardiogram, CT chest and abdomen were negative. ASO was normal. She was treated with multiple IV antibiotics but had no response. Consultations with specialists in ID, rheumatology, and ophthalmology were sought and suggested AKD. She then was treated with IVIG 160gm and large dose of aspirin. Her platelet and fever gradually decreased

to normal, and other general symptoms such as fatigue, poor appetite, and weakness improved. The dose of aspirin reduced from 2 gm/day which she has been taking for 3 days to 325mg/day due to possible aspirin ear toxicity. After being afebrile and stable condition for 2 days, she then was discharged home.

One week after discharged, the fever returned, which reached 101 degree; her radial pulses were absent. She then was admitted to the hospital again, her platelet increased again from 500,000 to 1 million. Her ESR was over 100 and C-reactive protein was high. An angiogram confirmed radial vasculitis. She then was given prednisone 100mg/day and monthly cyclophosphamide, her fever went to normal and radial pulse improved. Then she was discharged and followed up with a specialist.

### COMMENT

There are no tests to detect Adult Kawasaki Disease; the diagnosis sometimes is difficult at the beginning of disease development. Diagnosis requires fever of 5 days and four of the following five: (2)

- conjunctivitis,
- mucositis,
- extremity changes,
- rash,
- lymphadenopathy

Typically the diagnosis is made by evaluating the patient's symptoms, physical examination, and ruling out other diseases, particularly toxic shock syndrome, drug hypersensitivity syndrome, and infectious diseases. This case had following characteristics.

1. rash
2. fever which was no response to antibiotics
3. conjunctiva injection
4. desquamation
5. strawberry tongue
6. thrombocytosis at second weeks after rash
5. leukocytosis over 20k/ul
7. ALK/GGT/ALT/AST/BILIRUBIN increased at first week of fever.
8. ESR and C-reactive protein increased. ESR was over 100.
9. negative culture and other virus antibodies.

Liver function abnormalities, thrombocytosis, and ESR over 100 are very important indications for making the diagnosis for this case. Since there are only a few diseases that have thrombocy-

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tosis, and over 60% of KD has thrombocytosis, thrombocytosis is an alert sign for the diagnosis of KD.

Intravenous immunoglobulin has become one of most effective treatments for KD. The study shown the IVIG can reduce the prevalence of coronary artery abnormalities from 22% to 4.6% for children Kawasaki Disease (3), a single 2gm/kg dose therapy is better than 5-day 400mg/kg dose therapy for reducing incidence rate of coronary artery complications, duration of high fever, positive duration of C-reactive protein, and the number of hospital days (4). At present, the FDA has approved IGIV for use in six conditions, including replacement therapy for patients with antibody-deficiency disease, adjunct therapy in patients with poor antibody-producing capabilities, prophylaxis against certain types of infections, and several autoimmune disorders, including idiopathic thrombocytopenic purpura and Kawasaki disease. Numerous mechanisms have been proposed to explain the beneficial effects of IGIV, including the interaction of infused IgG with fragment crystallizable (Fc) receptors and complement proteins, the modulation of synthesis and release of cytokines and cytokine antagonists, and neutralization of circulating autoantibodies (5). While most adverse effects following IVIG treatment are not severe, occasionally more severe adverse effects occur, including anaphylactic reactions, severe eczematous skin reaction, and acute, usually transient, renal failure. (6)

Some books stated Corticosteroids are a contraindication for Kawasaki Disease. The reasons were not clearly stated. However, since the mechanics of KD obviously involve over-active immune response which causes vasculitis, particularly in middle-large artery, such as aorta and coronary artery. Steroid therapy to suppress the overactive immune response sounds reasonable. In fact, the studies show Corticosteroids are effective in the treatment of fever in most patients with IVIG-refractory KD. (7), and treatment of acute KD with intravenous methylprednisolone (IVMP), 30 mg/kg plus ASA/IVIG, compared with ASA/IVIG alone, resulted in faster resolution of fever, more rapid improvement in markers of inflammation, and shorter length of hospitalization. Adverse effects were infrequent. (8) Further studies have shown a significant reduction in the incidence of coronary artery aneurysms among patients who received corticosteroid therapy plus aspirin +/- IVIG compared with aspirin +/- IVIG alone (odds ratio [OR] 0.546; 95% confidence interval [CI]: 0.371-0.803); the benefit of corticosteroid therapy was maintained when study subsets of aspirin alone (OR: 0.601; 95% CI: 0.392-0.921) or aspirin + IVIG (OR: 0.352; 95% CI: 0.136-0.909) were compared with matched regimens that contained corticosteroids. The inclusion of corticosteroids in aspirin-containing regimens for the initial treatment of Kawasaki disease reduces the incidence of coronary aneurysms. (9)

The efficacy of intravenous immunoglobulin (IVIG) in the treatment of Kawasaki Disease has been unequivocally established, but questions remain concerning the adjunctive aspirin therapy in the treatment of KD. The treatment without aspirin in acute stage of KD had no effect on the response rate of IVIG therapy, duration of fever, or incidence of coronary artery aneurysms (CAA) when children were treated with high-dose (2 g/kg) IVIG as a single infusion, despite treatment before or after day 5 of illness. It seems unnecessary to expose children to high- or medium-dose aspirin therapy in acute KD when the available data show no appreciable benefit in preventing the failure of IVIG therapy, formation of CAAs,

or shortening the duration of fever. (10) and there is no benefit to high-dose aspirin compared to low-dose aspirin in the treatment of children with KD. (11)

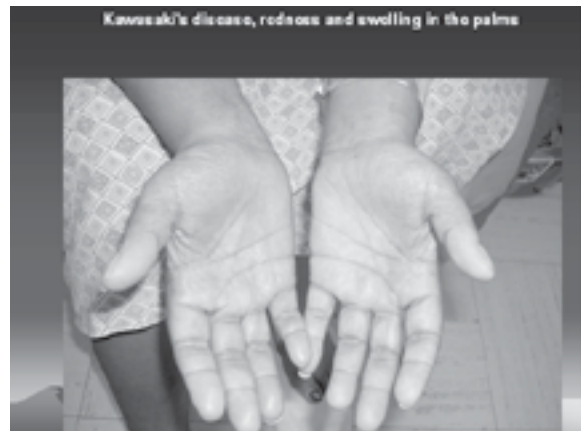
**REFERENCES**

1. Seve, P. **Adult Kawasaki disease: report of two cases and literature review**, *Semin Arthritis Rheum*. 2005 Jun;34(6):785-92
2. Mark H. Beers: *Merck Research laboratories*. P. 2362. *The Merck Manual seventeenth edition*
3. Hsu, CH. **Efficacy of plasmin-treated intravenous gamma-globulin for therapy of Kawasaki Syndrome**. *Pediatr Infect Dis J*. 1993 Jun; 12(6):509-12.
4. Sato N, **Selective high dose gamma-globulin treatment in Kawasaki disease: assessment of clinical aspects and cost effectiveness**. *Pediatr. Int*. 1999 Feb;41(1):1-7
5. **Ballow M. Clinical and investigational considerations for the use of IGIV therapy** *Am J Health Syst Pharm*. 2005 Aug 15;62(16 Suppl 3):S12-8; quiz S19-21
6. Vecchiotti G, **Severe eczematous skin reaction after high-dose intravenous immunoglobulin infusion: report of 4 cases and review of the literature**. *Arch Dermatol*, 2006 Feb;142(2):213-7
7. **Lang BA. Corticosteroid treatment of refractory Kawasaki disease**, *J Rheumatol*. 2006 Apr;33(4):803-9
8. **Sundel RP. Corticosteroids in the initial treatment of Kawasaki disease: report of a randomized trial**. *J Pediatr*. 2003 Jun;142(6):611-6
9. **Wooditch AC. Effect of initial corticosteroid therapy on coronary artery aneurysm formation in Kawasaki disease: a meta-analysis of 862 children**. *Pediatrics*. 2005 Oct;116(4):989-95
10. **Hsieh KS. Treatment of acute Kawasaki disease: aspirin's role in the febrile stage revisited**. *Pediatrics*. 2004 Dec;114(6):e689-93. Epub 2004 Nov 15
11. **Saulsbury FT. Comparison of high-dose and low-dose aspirin plus intravenous immunoglobulin in the treatment of Kawasaki syndrome**. *Clin Pediatr (Phila)*. 2002 Oct;41(8):597-601



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Deqing Li, M.D., PGY1, Department of Medicine General Medicine Service, William Beaumont Army Medical Center, El Paso, Texas.

Khwaja S. Alim, M.D., PGY3, Department of Medicine General Medicine Service, William Beaumont Army Medical Center, El Paso, Texas.

Kevin Akers, M.D., Chief Resident, Department of Medicine General Medicine Service, William Beaumont Army Medical Center, El Paso, Texas.

MAJ Todd Bennett, M.D., Attending, Department of Medicine General Medicine Service, William Beaumont Army Medical Center, El Paso, Texas.

MAJ Michael Abel, M.D., Attending, Department of Medicine General Medicine Service, William Beaumont Army Medical Center, El Paso, Texas.