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Kawasaki Disease "Unmasked": A Case Study from Fever to Full Recovery

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Abstract:

A 2-year-old boy presented to the paediatric emergency department with a 5-day history of persistent high fever reaching 40°C, marked irritability, reduced oral intake, and non-productive cough. The child's mother reported onset of symptoms following a minor upper respiratory infection two weeks earlier, initially managed at home with oral paracetamol and later with oral antibiotics (amoxicillin) prescribed by a primary care physician, which failed to resolve the fever or other emerging symptoms. On examination, the child exhibited bilateral non-exudative conjunctival injection, strawberry tongue with red cracked lips, anterior cervical lymphadenopathy (right sided, 2 cm node), polymorphous erythematous rash across the trunk and extremities sparing the diaper area, and indurative oedema of the hands and feet. These findings fulfilled the diagnostic criteria for complete Kawasaki disease (KD), prompting immediate hospital admission for further evaluation and treatment.

Keywords: Kawasaki disease, Amoxicillin, Conjunctival Injection, Strawberry tongue

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1. INTRODUCTION

Patient Background

The patient was a previously healthy full-term boy born via normal vaginal delivery with no perinatal complications or known allergies. Family history was unremarkable for autoimmune diseases, vasculitis, or early cardiac events, though a paternal uncle had a history of juvenile idiopathic arthritis. Developmental milestones were age appropriate, with up to date immunizations including measles mumps rubella at 18 months. No recent travel, sick contacts, or exposure to new foods or medications was noted beyond the recent antibiotic course. Social history indicated the child lived with both parents and a 4 year old sibling in an urban setting, with no tobacco exposure at home. Initial vital signs on admission included temperature 39.8°C, heart rate 140 bpm, respiratory rate 32/min, blood pressure 90/55 mmHg (normal for age), and oxygen saturation 98% on room air. Physical exam confirmed the mucocutaneous features without hepatosplenomegaly or neurological deficits[1].

1. Laboratory and Imaging Findings

Comprehensive laboratory investigations on admission day 5 of fever revealed marked systemic inflammation. Complete blood count showed leukocytosis (WBC 22.3 x 10^9/L with neutrophilia 72%), mild anemia (hemoglobin 10.5 g/dL), and thrombocytosis (platelets 450 x 10^9/L). Inflammatory markers were significantly elevated: C-reactive protein (CRP) 85 mg/L (normal <5 mg/L), erythrocyte sedimentation rate (ESR) 55 mm/h (normal <20 mm/h), with hypoalbuminemia (28 g/L) and mild transaminitis (ALT 65 U/L, AST 72 U/L). Urinalysis demonstrated sterile pyuria (WBC >10/HPF), and cerebrospinal fluid analysis (via lumbar puncture to rule out meningitis) was normal. Blood cultures and viral PCR panel (including adenovirus, enterovirus, EBV) were negative.

Echocardiography performed within 24 hours of admission was critical, revealing normal left ventricular function (ejection fraction 65%) but mild pericardial effusion (3 mm) and perivascular brightness of coronary arteries without ectasia or aneurysms (left main coronary artery z-score 1.8, right coronary artery z-score 2.0). Electrocardiogram showed sinus tachycardia with no ST-T changes. Chest X-ray was unremarkable, excluding pneumonia. Abdominal ultrasound revealed mild hydrops of the gallbladder, a common KD-associated finding. These results supported the clinical diagnosis and underscored the urgency of therapy to prevent coronary artery aneurysms (CAA), which occur in 15-25% of untreated cases[2].

2. Diagnosis

The diagnosis of complete KD adhered strictly to the American Heart Association (AHA) 2017 guidelines, updated in recent scientific statements: persistent fever for ≥5 days plus at least 4 of 5 principal clinical features—bilateral conjunctival injection, oral mucous membrane changes (strawberry tongue, lip fissuring), peripheral extremity changes (erythema/oedema), polymorphous rash, and cervical lymphadenopathy (>1.5 cm). Although incomplete KD was considered due to the child's age and potential for atypical presentation, the full complement of features confirmed complete status. Differential diagnoses such as scarlet fever, measles, Stevens-Johnson syndrome, juvenile idiopathic arthritis, and bacterial sepsis were excluded via

negative cultures, serology, and response to targeted therapy. Risk stratification using Kobayashi or Gunma scores placed the patient at moderate risk for CAA (score 22 on Kobayashi scale), guiding intensified monitoring[3].

3. Treatment Protocol

Treatment commenced promptly on admission per AHA recommendations, emphasizing intervention within 10 days of fever onset to minimize cardiac complications. Intravenous immunoglobulin (IVIG) was administered as a single infusion of 2 g/kg over 12 hours, accompanied by high-dose aspirin (80-100 mg/kg/day divided q6h) for its anti-inflammatory and anti platelet effects. Fever resolved within 24 hours post-IVIG, with rapid improvement in rash, oedema, and conjunctivitis. No IVIG resistance (defined as persistent fever >36 hours post-infusion) occurred, avoiding adjunct therapies like corticosteroids or infliximab.

Post defervescence, aspirin was transitioned to low-dose (3-5 mg/kg/day) for anti-thrombotic prophylaxis, continued until platelet normalization and echocardiographic clearance. Supportive care included intravenous hydration, nutritional support via nasogastric feeds initially, and monitoring in the paediatric high-dependency unit. Serial labs showed declining CRP (to 15 mg/L by day 7) and ESR, with platelets peaking at 650 x 10^9/L on day 12 before normalizing. Periungual desquamation of fingers and toes emerged on day 14, a hallmark of convalescence phase KD. Multidisciplinary input from cardiology, rheumatology, and infectious diseases ensured holistic management[4].

4. Hospital Course and Complications

The inpatient stay lasted 10 days, complicated by transient hypotension responsive to fluid bolus during IVIG infusion and mild gastrointestinal upset from aspirin, managed conservatively. No cardiac arrhythmias, myocarditis, or shock syndrome developed. Daily clinical assessments tracked resolution of mucocutaneous features: lip cracking healed by day 8, oedema subsided by day 6, and rash faded by day 7. Repeat inflammatory markers on day 10 confirmed normalization (CRP <5 mg/L, ESR 15 mm/h). Gallbladder hydropsy resolved on follow-up ultrasound. Parent education focused on medication adherence, fever monitoring, and cardiology follow-up scheduling. Discharge occurred with low dose aspirin, echocardiogram clearance, and instructions for slit lamp eye exam to rule for uveitis[5].

5. Follow-up and long-term management

Outpatient follow-up adhered to AHA stratified risk protocols. Echocardiogram at 2 weeks post diagnosis showed complete resolution of pericardial effusion and normalized coronary z-scores (<2.0), with no dilation. Clinical exams at 1, 3, 6, and 12 months confirmed absence of aneurysms, arthritis, or growth faltering; weight gain was appropriate (from 12 kg to 13.5 kg at 1 month). ECG remained normal throughout. Aspirin was discontinued at 8 weeks following two consecutive normal echocardiograms and normalized platelets (<450 x 10^9/L). At 6 months, stress echocardiography was normal, and the child resumed full activity including preschool. Long-term risks discussed included a 5% lifetime CAA recurrence rate and need for annual

cardiology surveillance until age 21, with counselling on endocarditis prophylaxis for invasive procedures. Genetic testing for familial KD predisposition was deferred given isolated presentation[7].

6. Discussion

This case reflects a classic complete KD in a toddler, highlighting the important role of early recognition and IVIG therapy in averting coronary sequelae, which affect up to 5% of treated cases versus 25% untreated. Diagnostic challenges in young children stem from overlapping features with common infections, yet prompt fever ≥5 days with evolving mucocutaneous signs warrants echocardiography and specialist consult . Recent AHA updates (2024-2025) emphasize adjunctive therapies for IVIG-resistant cases and advanced imaging like coronary CT angiography for high-risk patients. Public health implications include seasonal peaks (winter-spring) and potential post-COVID associations, underscoring vaccination and awareness campaigns. This patient's favourable outcome reinforces guideline driven care, with 95% coronary normality when treated <10 days. Future research into biomarkers (e.g., S100A12) may refine risk prediction.

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