A CASE REPORT OF KAWASAKI’S DISEASE IN A 17 YEAR OLD WOMAN

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ABSTRACT

A 17 year old woman presented to the Emergency Department with fever, abdominal pain, constipation, urinary symptoms and rash developing over the preceding fortnight. Dysuria and frequency started two days previously and she was now in urinary retention with concern raised regarding possible bowel obstruction. She was admitted under the surgical team for gastrograffin enema and catheterisation. Bowel obstruction was excluded and urinalysis revealed findings consistent with urinary tract infection, isolated as coliform. She was then referred to the general medical team as concerns were raised over an unusual rash in a febrile adolescent.

Over the previous two months she had been lethargic with joint pain, fever and sweats and had lost half a stone in weight. She had no past medical history, had received all childhood vaccinations, and took no regular medication, elicit substances or over the counter remedies. She had not been abroad or visited rural areas. Family history of diabetes and arthritis was present but nothing else of note. She was a philosophy student who lived with her parents and had no smoking, alcohol or sexual history.

Examination revealed a febrile, anxious individual who appeared in discomfort. She had a temperature of 37.9ºC. Cardiovascular and respiratory examination were unremarkable. She had generalised abdominal tenderness with soft abdomen and active bowel sounds. Rectal examination was unremarkable. Bilateral inguinal lymphadenopathy was noted with tenderness under the axillae. She complained of joint pain throughout, most notably her knees, hands and wrists. Joints were tender on palpation but no effusions were found.

Dermatological examination revealed white bullous non tender lesions of the palms and finger pulps bilaterally; which were starting to desquamate. [See pictures A and B] This had developed over the last two weeks initially starting as red patches more recently filling with white fluid. An erythematous blanching macular rash was noted on both lower limbs and lower back and white vesicles on the toes; and a reticular macular-papular purpuric rash of
arms and feet. Her lips were dry, sore and markedly cracked but she had no oral ulceration or sore throat.

Initial blood tests and chest radiograph were unremarkable and the differential diagnosis was urosepsis, viral illness with mesenteric adenitis and autoimmune disease.

Rheumatological opinion was reactive arthritis secondary to urinary tract infection but all investigation proved negative. Dermatological opinion was that of vasculitis but skin biopsy refuted this.

Paediatric opinion was obtained and incomplete Kawasaki’s disease was suspected due to the patient having a high grade fever of over five days duration with no obvious cause, and three of the five classical criteria namely sore, cracked lips; desquamating rash of the extremities and polymorphous exanthema. She also had supplementary symptoms supporting the diagnosis of arthralgia, abdominal pain and urethritis resulting in difficulty passing urine.

Her laboratory findings were not classical of Kawasaki disease but some features were present; she had a leucocytosis which peaked at 12.2 x 10⁹/L; a thrombocytosis which developed over week after presentation of 409 x 10⁹/L; and a mildly raised alanine transaminase of 47 IU/L. Her CRP did not go above 6 mg/L and ESR was raised at 11 mm/hr. Echocardiogram was performed to exclude coronary aneurysms. Aspirin 300mg QDS was started with intravenous immunoglobulin and dramatic improvement in symptoms was seen.

She has been subsequently followed up in the infectious diseases clinic and remains well.

**DISCUSSION: KAWASAKI’S DISEASE**

Kawasaki’s disease is an acute, self-limiting multi-organ vasculitis, of unknown aetiology most commonly seen in children (1). This syndrome first recognised in Japan in the late 1960s by Dr Tornisaku Kawasaki who initially identified the condition in a four-year old Japanese boy, and later Hawaii, is prevalent in those of Japanese descent but can occur in any ethnicity(1). Whilst 85% of cases are seen in children less than 5 years old the illness can be seen in children of any age and indeed adults. The peak age of incidence is 18 to 24 months with a male to female ratio of 1.5:1 (2). Kawasaki’s disease is extremely uncommon in patients over the age of nine years (3), with a survey in Japan demonstrating <1% of cases occurred in children of nine years or over (4). Due to the rarity of Kawasaki disease in older children it is often not considered as a diagnosis but as our case reflects this may be an error and the diagnosis should be considered more often in adolescents.

Kawasaki disease is a diagnosis of exclusion with no definitive diagnostic test. The diagnostic criteria (fever of five or more days with four of the
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following five criteria: bilateral non-exudative conjunctival congestion, polymorphous exanthema, diffuse erythema of oral and pharyngeal mucosa, cracked lips or strawberry tongue, and erythema or dequamation rash of the palms and soles, and cervical lymphadenopathy (1,5) are often fleeting symptoms and signs, may not be present simultaneously, and commonly resolve without any treatment (1,6), adding to the challenge of the diagnosis. Patients may present with cardiac sequelae, years after first development of Kawasaki disease, unable to recall any such childhood illness (7).

Diagnosis of Kawasaki disease requires exclusion of other febrile illnesses presenting with a rash such as measles, but should remain on the differential diagnosis of all those with prolonged fever of unknown origin, as the consequences of missing the diagnosis can be grave (8). Without treatment coronary artery abnormalities develop in 15-25% of patients with Kawasaki disease (8). The majority of deaths due to this condition occur between 15 and 45 days after the onset of fever and are most commonly due to cardiac involvement (9).

The diagnosis of ‘incomplete Kawasaki’s disease’ can be made in those patients who have a fever but do not present with at least four of the above diagnostic criteria, this often leads to a delay in diagnosis increasing the risk coronary artery involvement and thus long term morbidity and mortality (7,8,10). The presence of coronary artery defects on echocardiogram can aid the diagnosis in those lacking the typical clinical features. This increased risk of coronary artery abnormalities associated with incomplete Kawasaki’s means the clinician needs to have a high index of suspicion for the diagnosis and initiate treatment as soon as possible (11).

Occasionally, as in the case described, a child or adolescent may be admitted under the surgical team (9). The vast array of possible symptoms and signs that present in Kawasaki disease increases the difficulty and further delay diagnosis. Add to this the fact the disease is often resigned to the thoughts of paediatricians, the diagnosis does often not form part of the differential in young adults, a grave mistake. Burns et al report seventy four cases of cardiovascular complications in adolescents and young adults, eighteen of whom died, attributed to antecedent Kawasaki disease. Kawasaki disease often went unrecognised or was misdiagnosed as another childhood febrile illness. The mean age was 24.7 ± 8.4 years at presentation of cardiac sequelae (7). Hirata et al completed a cohort study of high school students in Japan concluding that Kawasaki disease although not interfering with physical growth and development during childhood, leads to cardiac disorders and increased chance of ECG abnormality (12). Kawasaki disease is the leading cause of acquired heart disease in children in Japan and North America (4). Coronary artery abnormalities are thought to be related to enhanced collagen synthesis and fibrosis in adolescents and young adults late after the onset of Kawasaki disease (13).

There are few case reports of Kawasaki disease in adolescents and young adults, although the disease can remain silent until this time and may even
present with myocardial infarction and sudden death; thus Kawasaki disease must be considered in those who present in young adulthood with myocardial infarction or sudden death (7).

This case, the diagnosis of atypical Kawasaki disease in a 17 year old woman, highlights the importance of considering the diagnosis in fever of unknown origin in children of all ages including adolescents, currently not standard practice as demonstrated in a survey which found >50% of general paediatricians did not consider Kawasaki disease in those over the age of 8 years (14). With consideration of these thoughts many more cases may be diagnosed thus reducing the morbidity from cardiac sequelae more commonly seen in adolescents and young adults. Research to date is concentrated in Japan but this should not halt progress in research in the UK and other nations where Kawasaki disease does and will continue to exist.

Investigations for Kawasaki’s disease, although non-specific, help in supporting its diagnosis. Findings consistent with inflammation including leucocytosis, elevated C-reactive protein and raised platelet count are often found. Thrombocytopenia is uncommon but is associated with increased likelihood of development of coronary aneurysm. Hypoalbuminaemia is associated with a prolonged severe acute phase. Sterile pyuria commonly present may be mistaken for partially treated urinary tract infection (11). Echocardiography, to detect coronary aneurysms, is an essential investigation in the acute phase in order to reduce morbidity and mortality resulting from the vasculitis (1).

The aetiology of Kawasaki disease is unknown, although an unidentified infectious trigger is considered plausible. Therapy is aimed at reducing the development of coronary artery disease rather than any specific genetic or biological target. Intravenous immunoglobulin (IVIG) prescribed in the acute illness is known to reduce the risk of developing cardiac complications and combined with high dose aspirin treatment has become the mainstay of treatment for Kawasaki disease (15)(1,11). Approximately 15% of children who are treated with IVIG and high dose aspirin continue to have fever and many studies show that those children who do not become apyrexial after the first IVIG infusion are at higher risk of developing coronary artery aneurysms (1). A second dose of IVIG should be given where the diagnosis of Kawasaki disease is thought to be most likely. In those who are still febrile, with acute inflammation, pulsed methylprednisolone may be considered (11,15).

Interestingly infliximab has been used successfully in the treatment of refractory Kawasaki disease suggesting TNF-alpha may play a significant role in the pathogenesis of Kawasaki disease. Further trials are needed to evaluate this theory in order to develop further therapies (16).

In those who have developed coronary artery disease regression of coronary aneurysms occurs in 50% of patients whilst 20% of patients will develop coronary artery stenosis (1). Those with asymptomatic coronary artery aneurysm benefit from long term low dose aspirin to prevent thrombosis (9). Those most at risk are those whom the diagnosis of Kawasaki
disease is missed and so the cardiac complications remain silent until myocardial infarction in later life (7).

Therapeutic options in the future may be vastly different as research progresses. Burgner et al performed a genome wide association study which showed a significant genetic association of sufferers of Kawasaki disease, identifying functionally related variants associated with disease susceptibility(17).

Kawasaki’s disease should be considered in patients with a persistent fever where other diagnoses have been excluded. The main complication associated with the disease is the development of coronary artery aneurysms which is the primary cause of long term morbidity and mortality. In those cases where Kawasaki’s disease is considered echocardiography should be carried out immediately and IVIG therapy should be initiated to prevent the risk of coronary artery aneurysm formation.

REFERENCES


Both picture A and B show the distinctive dermatological changes seen in the hands, of the patient presented,

**Picture A**

![Image of hands showing dermatological changes]

**Picture B**

![Image of hands showing dermatological changes]