

## Case Report

# Coronary Aneurysm and Myocardial Infarction in Young Adult Secondary to Undiagnosed Childhood Kawasaki Disease

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## Abstract

Kawasaki Disease is the leading cause of acquired heart disease in children. In a previous study Safi et al. demonstrated a case of undiagnosed childhood Kawasaki disease presenting as silent myocardial infarction during adolescence in 16 years old boy. The present case is a 25 years old young adult with a giant saccular coronary aneurysm who had suspicious childhood Kawasaki disease history. Myocardial infarction is a complication of coronary artery aneurysm. The majority of infarcts occurs in the first 6 months of the disease but may present later in life as our case.

## Keywords

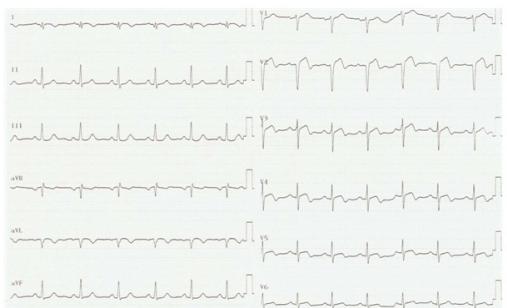
Angiogram; Arthritis; Coronary aneurysm; Kawasaki; Myocardial infarction; Young adults

## Case

A 25-year-old male patient was admitted to our hospital with a history of substernal burning prolonged to 4 - 5 hours and atypical chest pain. On admission, his blood pressure was 110/60 mmHg, and heart rate was 85 beat/min. There was no abnormal physical sign on systemic examination. His electrocardiogram showed ST elevation and biphasic T waves

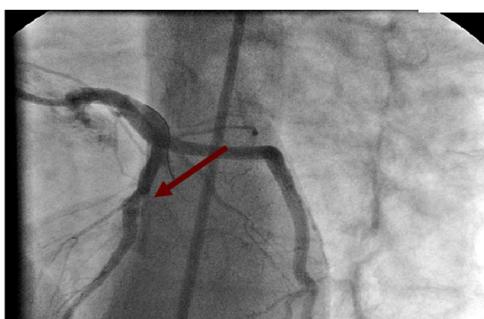
in the pre cordial V1-V6 leads. ECG showed development of negative T waves in leads D1 and a VL. The patient had electrocardiographic evidence of sub acute anterior wall myocardial infarction. In patient's past medical history, it was revealed that the patient had a presence of fever more than five days, cervical lymphadenopathy and various skin rashes at age between five and ten years. All clinical manifestations had resolved by 4 weeks without any specific treatment. There was no risk factor in patient's family history of coronary artery disease (Figure 1).

The cardiac marker test results upon admission are as follows; Cardiac Troponin I: 4.459 (Reference Range (RR):



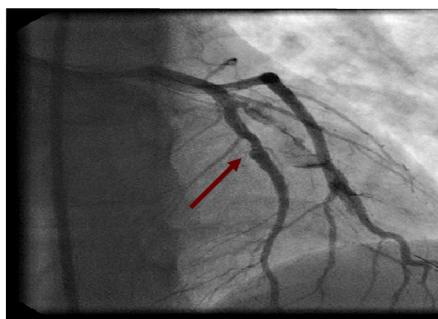
**Figure 1:** ST elevation and biphasic T waves in the precordial V1-V6 leads, Negative T waves in lead D1, aVL.

0-0.1 ng/ml), Creatine Kinase: 479 (RR: 10-172 IU/L), Creatine Kinase-MB: 73 (RR: 0-25 U/L). Echocardiography showed segmental left ventricular systolic dysfunction, apicalateral and apicoposterior hypokinesia. A diagnosis of sub acute anterior myocardial infarction was made and he was referred to the cardiac catheterization laboratory for primary coronary angioplasty. Coronary angiogram showed the first diagonal branch (D1) of the left anterior descending (LAD) coronary was totally occluded (Figure 2).

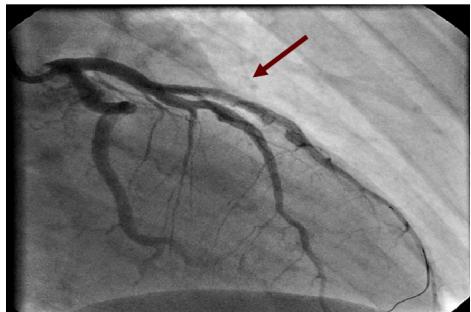


**Figure 2:** Total occlusion of the first diagonal branch (D1) of the left anterior descending (LAD) coronary

After the implementation of balloon angioplasty, a giant saccular coronary aneurysm was also found. The aneurysm of the middle segment of the D1 was repaired with two stent-grafts. The circumflex coronary artery was also aneurysmal. After coronary intervention, patient's symptoms improved and patient observed in coronary intensive care unit for 7 days. Patient was discharged with long-term anti platelet and  $\beta$ -adrenoceptor blocker therapy and close follow up (Figures 3 and 4).



**Figure 3:** The aneurysm of the middle segment of the D1



**Figure 4** The middle segment of the D1 was repaired with two stent-grafts.

## Discussion

Kawasaki disease is an acute systemic vasculitis, which is a febrile multisystem disease. It is the leading cause of acquired heart disease in children [1]. The most severe sequelae of Kawasaki disease are cardiac complications like coronary artery aneurysms [2]. Coronary artery aneurysms or ectasia can be found in 15% to 25% of untreated children usually several weeks after symptom onset [3]. Therefore Kawasaki disease may cause myocardial infarction, ischemic heart disease, or sudden death [3-5]. In young children and adolescents, reasons of myocardial infarction are Takayasu's Arteritis, Marfan syndrome, Systemic Lupus Erythematosus, Behcet's Disease, and Kawasaki Disease [6].

Safi et al. [7] demonstrated a case of undiagnosed childhood Kawasaki disease presenting as silent myocardial infarction during adolescence in 16 years old boy. The present case is a 25 years old young adult with a giant saccular coronary aneurysm. In our case, the coronary artery aneurysm was presumably secondary to Kawasaki disease. At age between five and ten years, the patient had a history compatible with Kawasaki disease symptoms. The patient was asymptomatic between history compatible with Kawasaki disease and present illness. Myocardial infarction is a complication of coronary artery aneurysm. The majority of infarcts occurs in the first 6 months of the disease but may present later in life as our case [2].

The disease appears worldwide in young children but mainly in Japan, Asia, and the United States [8]. Cervical lymphadenopathy, fever for at least five days, a generalized rash, conjunctivitis, red palms and soles, indurative edema with subsequent skin desquamation, and changes in the oral mucosa are the clinical presentations of Kawasaki disease [9]. The presence of four symptoms along with coronary artery aneurysms is diagnostic. The case fatality rate secondary to coronary artery aneurysm is 0.5% to 2.8% [8]. The prognosis of the disease is generally good and normally, full recovery can be obtained [10]. Aneurysms developed children need close follow-up and may need long-term anticoagulation therapy [8]. Children in whom aneurysms develop might result with thrombus formation and myocardial infarction. It occurs most often in the first year after the illness, with rare occurrence

later in life [7]. All children with Kawasaki Disease should have echocardiography performed four to six weeks after disease onset. It is necessary to follow-up with a pediatric cardiologist who the patients with coronary artery abnormalities. Patients with giant coronary artery aneurysms require prolonged anti-coagulation therapy [11].

In an article about Kawasaki disease after pediatric coronary bypass surgery, they found an excellent long-term prognosis, with a 25-year survival rate of 95%. In this study, they followed 114 children ranging in age from one year to 19 years [12].

## Conclusion

Kawasaki disease primarily affects children younger than 5 years but rarely presents as a myocardial infarction in adolescents and young adults. Echocardiography and angiography confirm the cardiac complications and vasculitis [8].

The purpose of the present paper is to help the clinician recognize the long-term complication of Kawasaki Disease in young adults with the symptoms of acute coronary syndrome.

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