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Brief Report

Acute myocardial infarction as the first manifestation of the incomplete Kawasaki disease in a young male

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Abstract Kawasaki disease is a systemic vasculitis occurring in children of all ages. Coronary arterial aneurysms are one of the main fatal complications of the disease, and are usually observed with the onset of coronary arterial disease in adults. We report a young male presenting with myocardial infarction due to coronary arterial aneurysms, but in the absence of previous symptoms of Kawasaki disease.

Keywords: Coronary arteries; aneurysm; childhood

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KAWASAKI DISEASE IS A SELF-LIMITED ACUTE vasculitis that occurs mainly in young children and the infants. The disease is markedly more prevalent in children of Japanese. The annual incidence has been reported to be lower in Iran, at 7.3 per 100,000 in children under 5 years old, and is rarely accompanied by ischaemic heart disease, this affecting only 1 in 25 of those with the disease.[1]

Blood vessels throughout the body are involved in this generalized systemic vasculitis, but most deaths result from the cardiac problems.[2] Even many years after its onset, aneurysms and stenoses in the coronary arteries may result in an acute myocardial infarction and sudden death, a happening described as "missed" Kawasaki disease in childhood.[2] Due to the young age of most patients, concerns have focussed mainly on diagnosis and better strategies for treatment. We describe here a young male with Kawasaki disease who presented with chest pain and acute myocardial infarction as the first manifestation of coronary arterial aneurysms.

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Case report

A 10-year-old overweight male was referred, after a significant delay, with typical chest pain. He reported discomfort of uncertain origin in his chest over the previous month, albeit with no fever or mucosal changes. The echocardiogram, along with elevated levels of creatin kinase-muscle and brain type and lactate dehydrogenase in the serum, confirmed an antero-lateral myocardial infarction. Levels of creatin kinase- muscle and brain type at the day of admission were measured at 224, 223 and 217 units per litre, followed by 64 units per litre in the second day. The results for lactate dehydrogenase were 1909, 1336, 2408 units per litre. Nuclear imaging or exercise testing were not performed.

Angiography, performed on the basis of the clinical signs and echocardiogram indicating myocardial ischaemia, revealed the presence of a giant coronary arterial aneurysm involving the main stem of the left coronary artery and the origin of the anterior interventricular artery (Fig 1a, b), along with multiple saccular aneurysms of the right coronary artery (Fig 1c, d). The contractility of the left ventricle was decreased, the ejection fraction being measured at 35%, and akinesia was obvious in the antero-apical and infero-basal segments (Fig. 2). Attempted balloon angioplasty was unsuccessful due to failure to cross

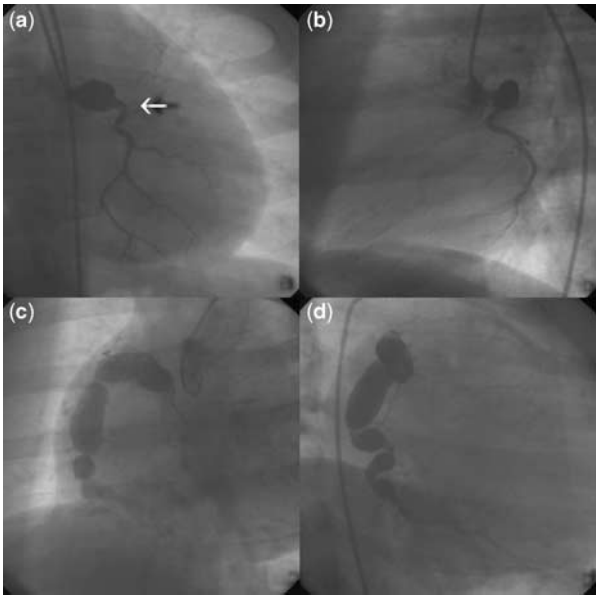

Figure 1.
*The angiogram shows a giant aneurysm of the main stem of the left coronary artery involving the origin of the anterior interventricular artery (**a** and **b**, stump arrowed). Several saccular aneurysms are obvious in the right coronary artery (**c** and **d**).*

the lesion with a guidewire. No calcifications were obvious on the chest X-ray or on the angiography film. His parents refused any surgical interventions, such as coronary arterial bypass grafting, and he is now followed-up regularly, receiving tablets of Warfarin, Aspirin and Captopril.

Discussion

Kawasaki disease is an acute vasculitis of small and medium size arteries. The well described fatal complication is the involvement of the coronary arteries, characterised by the development of aneurysms followed by a thrombotic occlusion. The purpose of treatment in the acute phase is to reduce the inflammation in the coronary arterial wall, while long term therapy is required to preventing myocardial ischaemia or infarction, which occurs in about one-twentieth of the patients who develop coronary arterial aneurysms.[3]

Acquired ischaemic events caused by stenotic lesions are more common, and it seems that the myocardial infarction generally happens within the first year of the illness.[4] In the later stages, the sites of the coronary stenoses will be stiffer, and percutaneus coronary intervention for myocardial ischaemia may then be unsuccessful, necessitating coronary arterial bypass grafting.[5] The physicians may be a part of delayed diagnosis.[6] Evidence shows that earlier treatment leads to a lower probability of aneurysmal formation. This is more likely to be achieved in patients with the classic

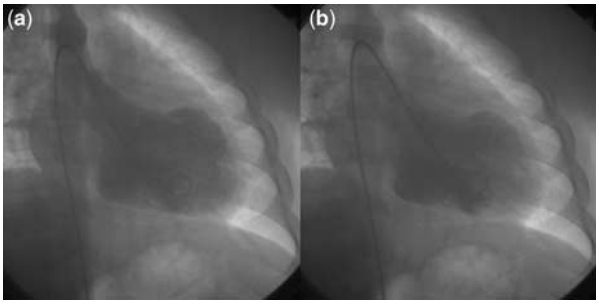

Figure 2.
*Akinesia was revealed in the antero-apical wall of left ventricle, as well as the infero-basal segments, with panel (**a**) showing diastole and panel (**b**) systole.*

complete signs and symptoms, but is not practically provided in all. A review of 100 patients with Kawasaki disease reported coronary arterial lesions as seen on the initial echocardiogram to be more prevalent in patients with incomplete disease who were treated significantly later.[7] This increased incidence of coronary arterial lesions in those with the incomplete form of Kawasaki disease is also reported from Iranian studies.[8] We were unable to define the onset of the illness in our patient, albeit that there was no evidence of a chronic situation, and the infarction may well have happened, as is usually the case, in the first year.

Subsequent to the detection of the arterial aneurysms, a second look to his past medical history failed to reveal any documented long term or intermittent fever, or any mucosal changes. A delay in the diagnosis, male gender, and older age, all reported as risk factors for coronary arterial abnormalities in Iranian patients with Kawasaki disease,[8] are however present in our patient, who suffered a localized stenosis due to a giant aneurysm. This severe stenosis is not uncommon, as it is shown that a dilation of more than 6.0 millimetres results in a high possibility of irreversible change in the coronary arterial wall, followed by stenosis or occlusion.[9] The reported patient is the first young patient to be seen in our experience of 12 years at Tabriz University of Medical Science Heart Centre, and confirms the critical outcome for late diagnosis of Kawasaki disease. In the future, new techniques may well supplant surgical intervention as the best therapeutic strategy.[10] Improved awareness of the disease by general practitioners, and use of the echocardiogram early in its course, may lead to an improved outcome for those suffering coronary arterial involvement.

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