Coronary artery aneurysm in Kawasaki disease

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ABSTRACT

A 3-year-old male presents to the emergency department with chief complaints of fever and vomiting. He had a positive rapid streptococcus throat test with cervical lymphadenopathy. The patient was started on antibiotics. On examination, there was diffuse erythematous macular rash on the chest. Laboratory tests revealed elevated white cell count and C-reactive protein. Electrocardiogram was notable for prolonged PR interval indicating 1st degree atrioventricular block. Echocardiogram revealed ectasia of the right coronary artery (RCA). A presumptive diagnosis of Kawasaki disease was made and the patient was started on high-dose aspirin and intravenous immunoglobulins. Cardiac computed tomography angiography (CTA) showed an aneurysm of the proximal RCA measuring up to 7.4 mm. The RCA immediately proximal to the aneurysm measured 3 mm in diameter. The Z score was 13.4. Oblique coronal image from cardiac CTA and volume rendered images demonstrated an aneurysm of the proximal RCA. The patient improved with treatment.

Keywords: Coronary artery aneurysm, Kawasaki disease, Catheterization, CTA

DIFFERENTIAL DIAGNOSIS

- Drug hypersensitivity
- Juvenile idiopathic arthritis
- Staphylococcal scalded skin syndrome
- Stevens–Johnson syndrome
- Streptococcal scarlet fever
- Toxic shock syndrome
- Viral infection.

DISCUSSION

Kawasaki disease (KD) is a systemic vasculitis disease of children and young adults involving medium and small vessels.[1,2] It most often affects children under 5 years of age. KD can involve multiple organs, including the heart and is the most common cause of coronary artery aneurysms (CAA) in this age group. CAAs are seen in approximately 25% of children with KD. CAA in Kawasaki's disease maybe single or multiple. They maybe saccular or fusiform in appearance and can calcify over

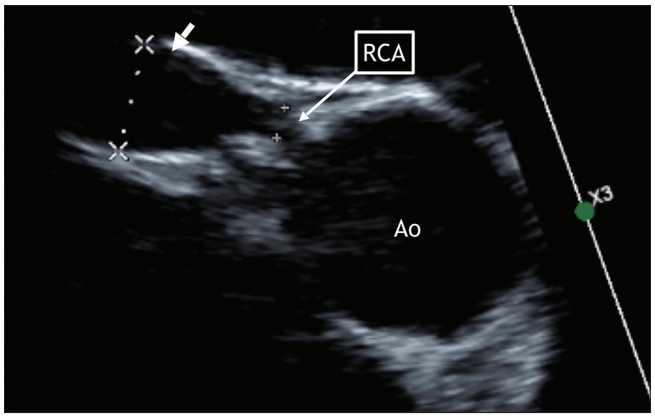

Figure 1: Echocardiogram demonstrating aneurysm of the right coronary artery (short arrow) just beyond its origin from the aorta (Ao)

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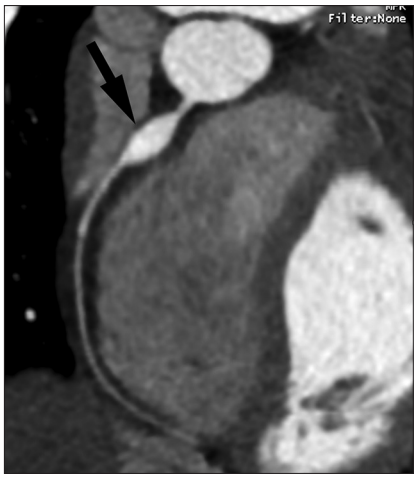

Figure 2: Oblique coronal image from cardiac computed tomography angiography showing a fusiform aneurysm of the proximal right coronary artery (black arrow)

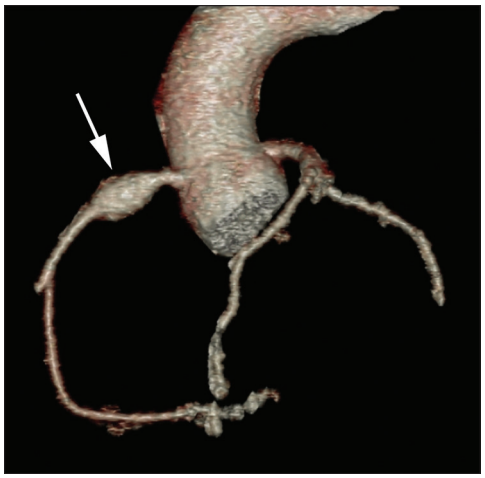

Figure 3: Volume rendered image from cardiac computed tomography angiography showing a fusiform aneurysm of the proximal right coronary artery (white arrow)

time. CAAs can undergo luminal thrombosis.[3] Over time, these findings can lead to myocardial ischemia with resultant ischemic cardiomyopathy, scarring, and remodeling.

Its prevalence is highest in Japan, where the annual incidence rate is 240 per 100,000 children aged up to 4 years, compared to 9–19/100,000 children in the same age range in the United States.[4]

The diagnosis of KD is based on criteria defined by the American Heart Association, with symptoms including fever for 5 days, with four out of five clinical features including bilateral conjunctivitis, erythematous changes of the lips and oral mucosa, changes in the extremities, rash, and cervical lymphadenopathy. In the absence of four clinical features, if echocardiogram reveals coronary artery disease, the diagnosis of KD can be made [Figure 1].[5]

Echocardiography is generally the initial imaging modality, since it is noninvasive and used for imaging of children due to the absence of radiation. However, echocardiogram has certain limitations including inadequate visualization of the coronary arteries and operator dependence. Invasive coronary angiography is considered to be the gold standard. However, CT angiography is being performed more frequently for diagnosis and follow-up of CAAs, including the evaluation of complications seen with KD [Figure 2 and 3].[6] Aspirin and intravenous immunoglobulin have reduced morbidity associated with this disease.[5]

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Conflicts of interest

There are no conflicts of interest.

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