Late Presentation of coronary Artery Aneurysm in a Child affected by kawasaki disease-case report

f.ashnaei MD

Pediatric cardiologist

Lavasani hospital

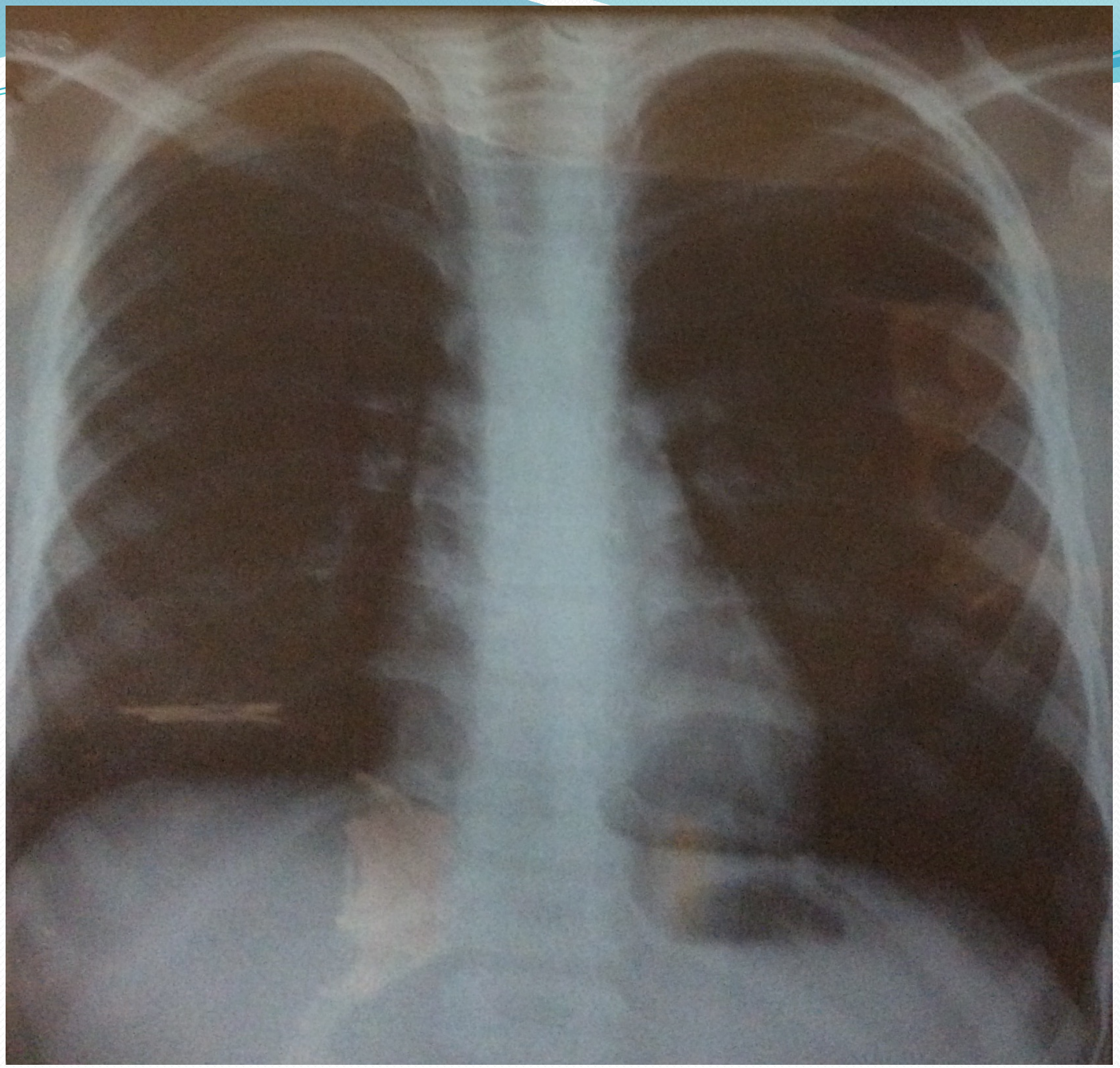
Tehran

Case presentation

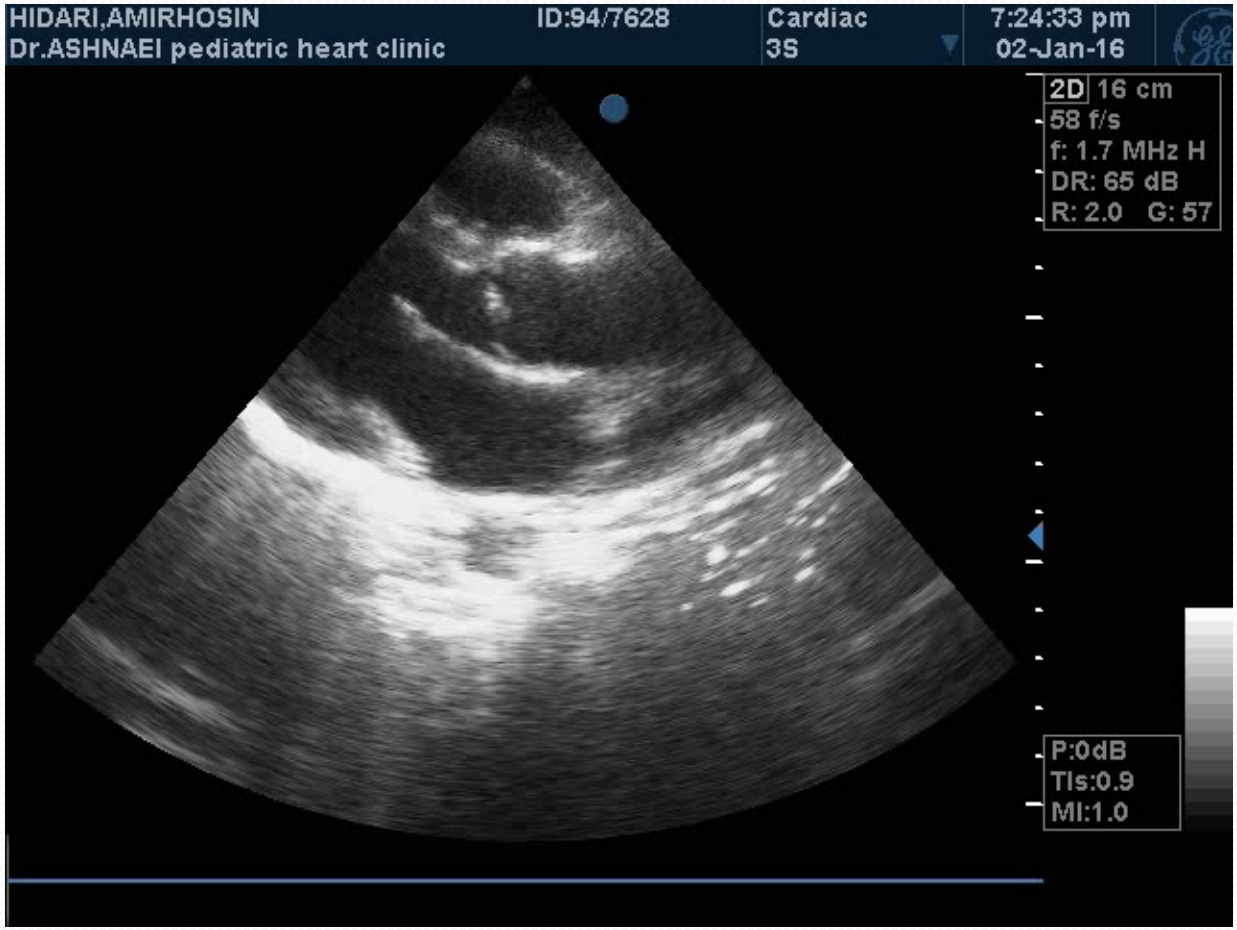
- 11 years old boy , 41 kg
- Admitted in the hospital with fever 2.5 years ago
- Diagnosed as kawasaki disease , had been prescribed IVIG and aspirin
- No evidence of coronary involvement in hospital and after that
- Recently (after 30 month) who developed RCA aneurysm in echocardiographic follow up
- No clinical symptom
- Normal exercise test
- Associated lesion :BAV,AI


BASEBALL
2

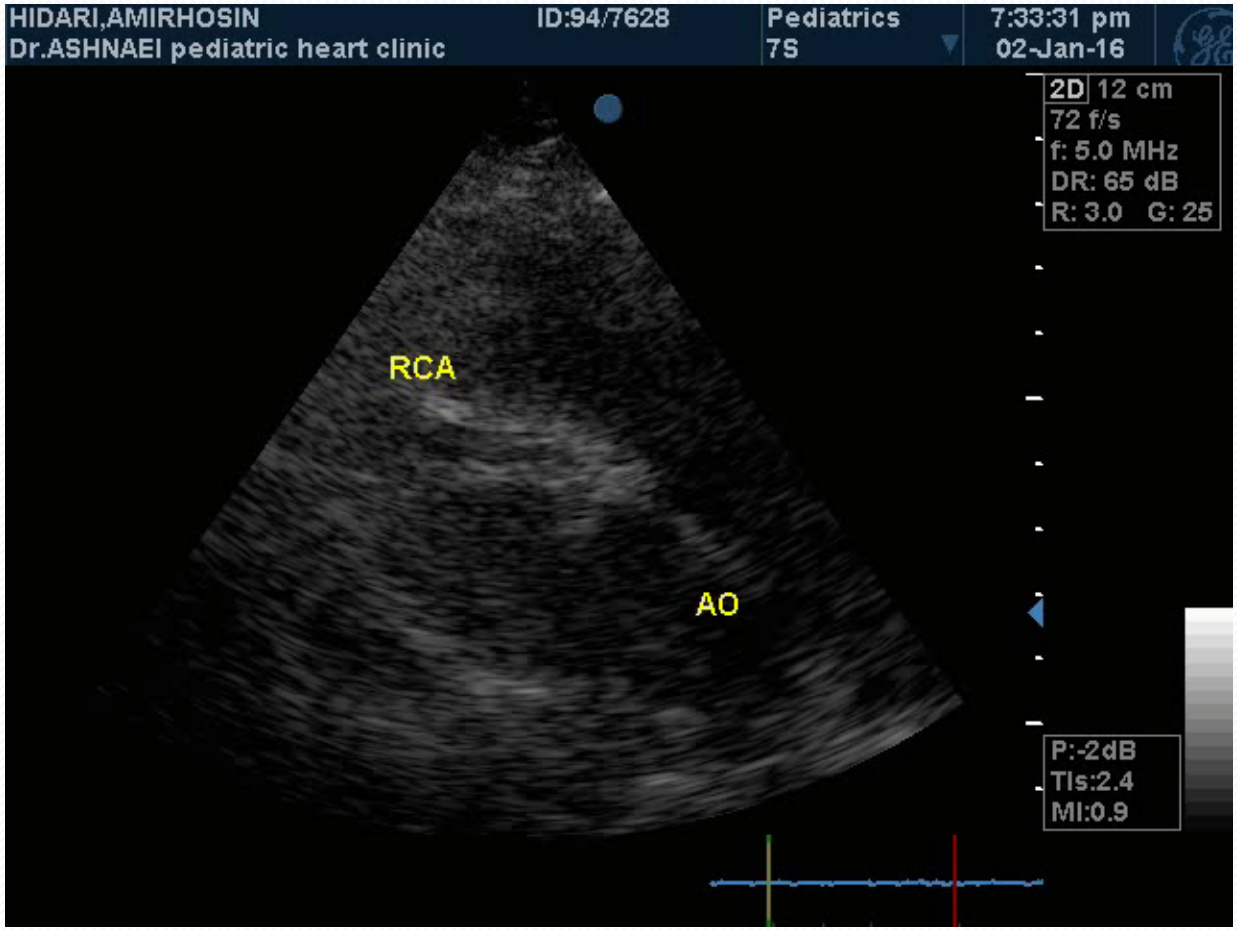
mm/mV 0.15-100Hz AC50
2005-06-08 07:25:40
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
V2.4b
LAVASANI
ID :050608-0
Name :
Age : 35 y
Sex : Female
BP :
Height :
Weight :
HR :
P Dur :
PR int :
QRS Dur :
QT/QTC nt :
P/QRS/T axis :
RV5/SV1 amp :
RV5+SV1 amp :
RV6/SV2 amp :



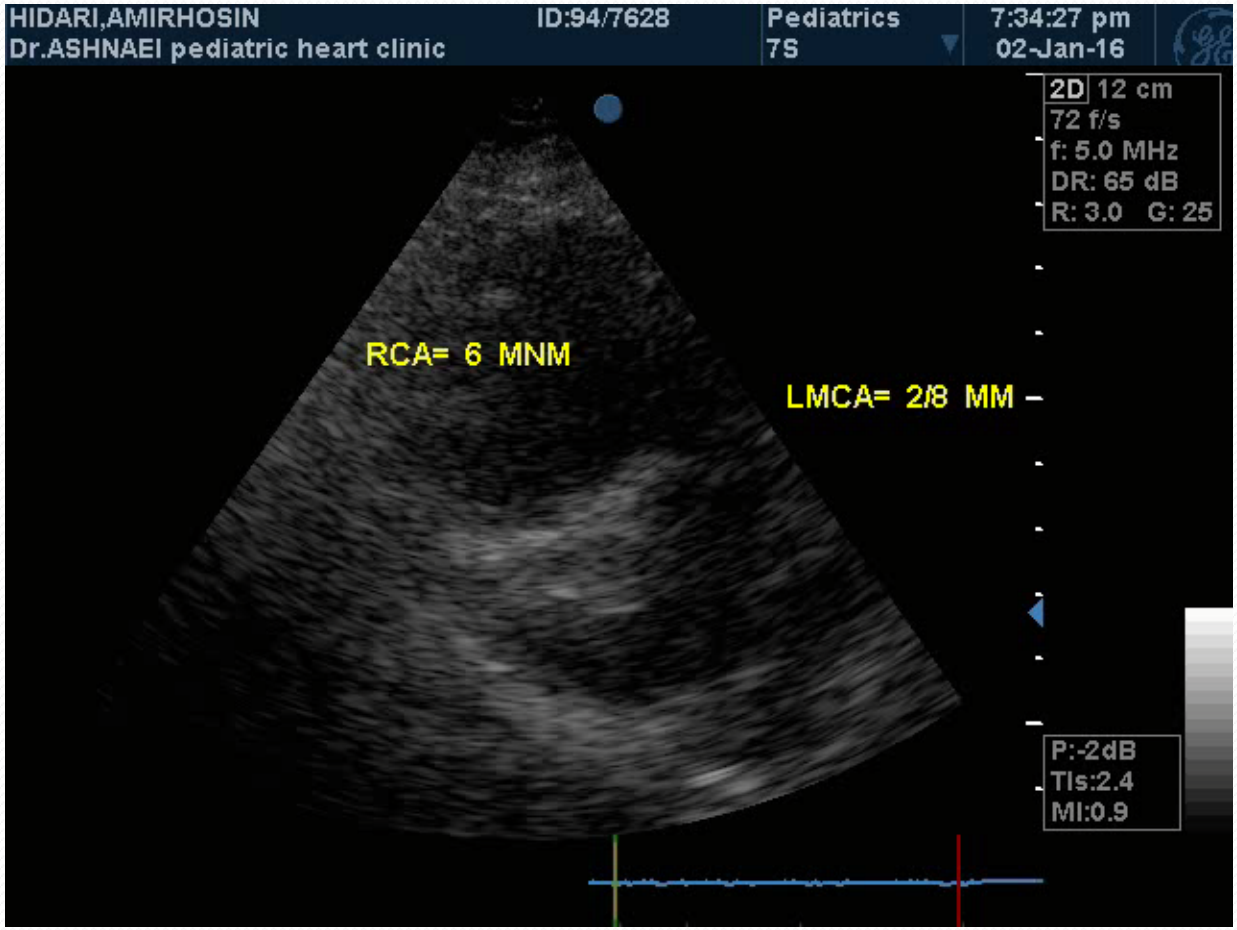
BAV (thick cusps)

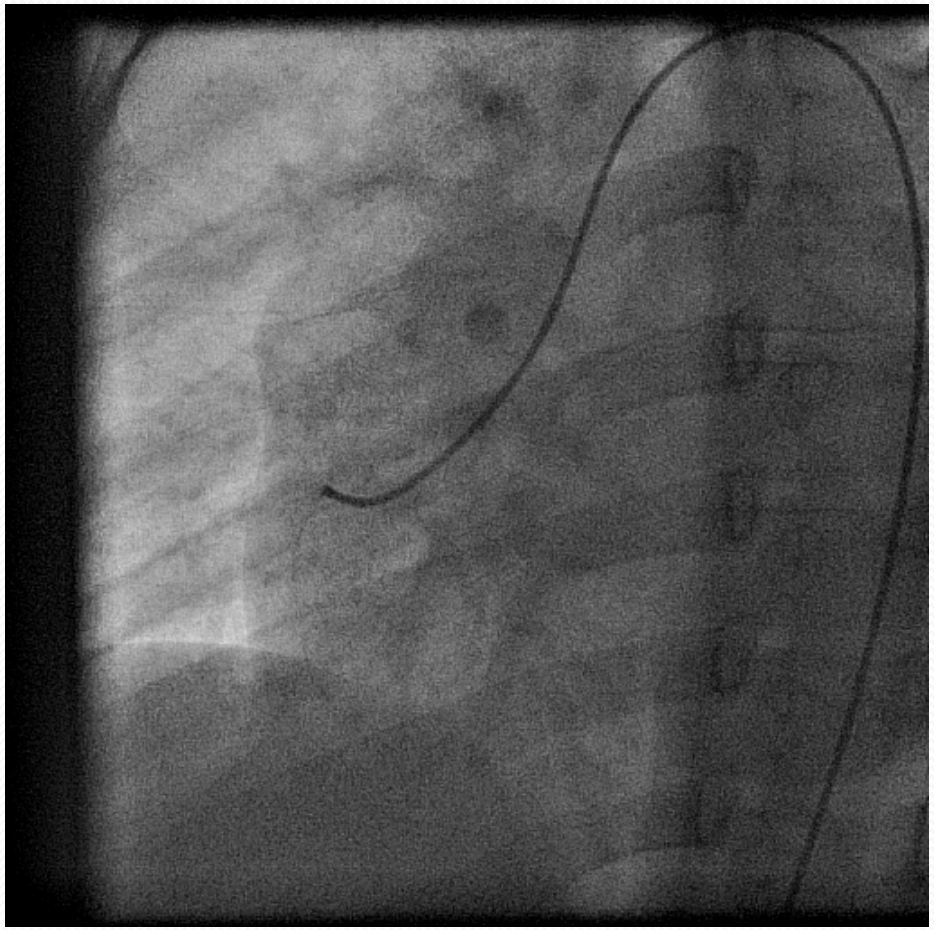


Dilated RCA


HIDARI,AMIRHOSIN
ID:94/7628
Dr.ASHNAEI pediatric heart clinic
Pediatrics
7S
7:33:31 pm
02-Jan-16
2D 12 cm
72 f/s
f: 5.0 MHz
DR: 65 dB
R: 3.0 G: 25
RCA
AO
P:-2dB
TIs:2.4
MI:0.9

RCA= 6 MM


HIDARI,AMIRHOSIN
ID:94/7628
Dr.ASHNAEI pediatric heart clinic
Pediatrics
7S
7:34:27 pm
02-Jan-16
2D 12 cm
72 f/s
f: 5.0 MHz
DR: 65 dB
R: 3.0 G: 25
RCA= 6 MNM
LMCA= 2/8 MM
P:-2dB
TIs:2.4
MI:0.9



Z-score= 7

management of coronary artery aneurysm in kawasaki disease

- KD is the leading cause of acquired heart disease in children in most developed countries
- KD is the second most common multisystem vasculitis of infancy and childhood behind HenochSchonlein purpura.
- Coronary artery aneurysms or ectasia develop in 15% to 25% of untreated children; treatment with IVIG in the acute phase of the disease reduces this risk to 5%
- Although 55% of patients who have identified coronary lesions during the acute phase of the disease typically show regression or reduction in these lesions within 1-2 years

management of coronary artery aneurysm in kawasaki disease

- The most important predictor of myocardial infarction is aneurysm size.

- Aneurysm classified as:

  small (internal diameter < 5 mm or z score =5>to 2.5)

  medium (5-8 mm or z score = 5-10)

  giant (> 8 mm or z score > 10)

Table 4 Risk stratification and follow-up recommendations for children with Kawasaki disease[6]

Risk level	Pharmacological therapy	Physical activity	Follow-up and diagnostic testing	Invasive testing
Level I (no coronary artery changes at any stage of illness)	None beyond first 6–8 weeks	No restrictions beyond first 6–8 weeks	Cardiovascular risk assessment, counselling at 5-year intervals	None recommended
Level II (transient coronary artery ectasia that disappears within 6–8 weeks)	None beyond first 6–8 weeks	No restrictions beyond first 6–8 weeks	Cardiovascular risk assessment, counselling at 3-year to 5–year intervals	None recommended
Level III (one small-medium coronary artery aneurysm/major coronary artery)	Low-dose aspirin (3–5 mg/kg aspirin per day), at least until aneurysm regression documented	For patients <11y old, no restriction beyond 1st 6–8 weeks; patients 11– 20 years old, physical activity guided by biennial stress test, myocardial perfusion scan; contact or high-impact sports discouraged for patients taking antiplatelet agents	Annual cardiology follow-up with echocardiogram +ECG, combined with cardiovascular risk assessment, counselling; biennial stress test/ evaluation of myocardial perfusion scan; consider CAA imaging using CT or MR angiography	Angiography, if non-invasive test suggests ischaemia
Level IV (>1 large or giant coronary artery aneurysm, or multiple or complex aneurysms in same coronary artery, without obstruction)	Long-term antiplatelet therapy combined with warfarin (target INR 2.0–2.5) or low molecular-weight heparin (target: antifactor Xa level 0.5–1.0 U/mL) should be considered in all patients with giant aneurysms	Contact or high-impact sports should be avoided because of risk of bleeding; other physical activity recommendations guided by stress test/evaluation of myocardial perfusion scan outcome	Biannual follow-up with echocardiogram +ECG; annual stress test/evaluation of myocardial perfusion scan 1st angiography at 6–12 mo or sooner if clinically indicated; repeated angiography if non-invasive test, clinical, or laboratory findings suggest ischaemia; elective repeat angiography under some circumstances; consider CAA imaging using CT or MR angiography	1st angiography at 6–12 months or sooner if clinically indicated; repeated angiography if non-invasive test, clinical, or laboratory findings suggest ischaemia; elective repeat angiography under some circumstances
Level V (coronary artery obstruction)	Long-term low-dose aspirin; warfarin or low molecular-weight heparin if giant aneurysm persists; consider TPA to dissolve clot; consider use of β-blockers to reduce myocardial O2 consumption; consider statins and/or ACE inhibitors	Contact or high-impact sports should be avoided because of risk of bleeding; other physical activity recommendations guided by stress test/myocardial perfusion scan outcome	Biannual follow-up with echocardiogram and ECG; annual stress test/evaluation of myocardial perfusion scan	Angiography recommended to address therapeutic options; consider CAA imaging using CT or MR angiography intermittently to monitor

Medical management

- ✓ No coronary involvement : aspirin (6-8 w) , nl acute phase reactant > aspirin DC
- ✓ Small aneurysm : aspirin until aneurysm regression
- ✓ Medium size aneurysm: aspirin + clopidogrel until aneurysm regression
- ✓ Giant aneurysm : apirin +warfarin or LMWH

Medical management

- giant aneurysms : aspirin + warfarin , Heparin or LMWH should be administered initially for at least 48 h and only stopped when warfarin has been commenced and the INR is stable between 2-2.5 to avoid paradoxical thrombosis due to protein C and S depletion that may occur when warfarin treatment is started.

catheter intervention

Indication :

- ✓ ischemic symptoms
- ✓ reversible ischemia on stress test
- ✓ 75% stenosis in the LAD

- ❖ in general, conventional PTCA has not been successful when it is done 2 years after the acute illness because of dense fibrosis and calcification in the arterial wall (different pathology relative to adult atherosclerosis)

- ❖ PTCA is associated with a high rate of restenosis or occlusion in KD patients, thus rotational atherectomy or bypass surgery may be advisable as an alternative procedure

SURGERY indication

- ✓ no experience of intervention
- ✓ small baby
- ✓ Sever myocardial dysfunction
- ✓ complex aneurysm (multiple , long segment)
- ✓ Ostial lesions

surgery

- internal thoracic artery is used , no saphenous vein
- In the setting of giant coronary aneurysms without significant obstruction, CABG may be ineffective in preventing myocardial infarction, as graft patency may be compromised by competing flow from the native coronary artery.
- excision or plication of the coronary artery aneurysm have not been successful

Coronary thrombosis

Indication for intervention :

- ✓ symptomatic ischemia
- ✓ laboratory findings that suggest ischemia
- ✓ severely stenotic lesions that appear likely to progress to coronary artery ischemia
- first 6 mo after KD → medical therapy (high risk for catheter intervention)
- Late onset thrombosis → catheter intervention (if possible)

Because the potential exists for allergic complications with the use of streptokinase in patients who have had streptococcal pharyngitis in the last 6 months (KD) this medication is best avoided , tissue plasminogen activator

Follow up

- Children who have experienced KD and acute phase coronary artery involvement should reduce exposure to atherosclerosis risk factors, including obesity, hyper lipidemia, smoking and hypertension for lifelong

Home message:

LATE PRESENTATION

prolonged observation