The spectrum of cardiovascular lesions requiring intervention in young adults after Kawasaki disease

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154 individuals age ≥ 16 years with a history of KD enrolled

- Cohort 1: 63 participants (41%) originally diagnosed with KD and followed at our center
- Cohort 2: 91 participants (59%) referred from other centers or self-referred
Outcomes

- 20 subjects (13%) required cardiovascular interventions:
  - 12 diagnosed with KD in childhood,
  - 7 with history of a KD-compatible illness, and
  - 1 with proximal coronary artery aneurysms compatible with KD

- 9 had percutaneous interventions and 11 had surgery
  - Age at first intervention: 4 – 53 years

- 14/20 (70%) participants were asymptomatic until experiencing a major CV event:
  - 8 had acute MI
  - 3 had angina
  - 1 presented with end-stage congestive heart failure requiring cardiac transplantation, and
  - 2 presented with extremity claudication.
Challenges

- Aneurysms with large clot burden
  - Assess vessel size
  - Medical and mechanical therapy
- Dense calcification
- Timing?
- CABG vs PCI?
- Peripheral Artery Disease
Case #1

Giant aneurysms with large clot burden
Unrecognized, Untreated KD in Childhood

- 32 year old Laotian male presents with two hours of chest pain and 2 mm inferior lead ST segment elevation
- No history of tobacco use, diabetes, hyperlipidemia, or family history of premature MI
Two months later...
Case #2
Dense Calcification
“Remodeled” aneurysm ≠ normal vessel

29 yo. Palestinian male presented with increasing symptoms of shortness of breath, weight gain, and fatigue.

PMHx: Kawasaki disease at age 2 yrs.
• 2D echo: 4-6mm bilateral, fusiform aneurysms
• Pericarditis requiring pericardiocentesis,
• Serial echoes: “resolution of aneurysms”, normal function 2 years post-KD onset

Pt. lost to follow-up, competed in high school sports
Dense calcification in LAD

Ossification in arterial wall with bone marrow elements
Case #3

IVUS required for accurate assessment of vessel lumen size in the setting of MI
37 year old Vietnamese man presented with chest pain and inferior lead ST elevation on ECG

- Parental history revealed KD-compatible illness age 6 years
- Cardiac Risk Factors: smoking, hyperlipidemia
Six weeks later, he returns with unstable angina...
Cases #4 and #5

Symptomatic peripheral vascular stenoses
KD vascular lesions are distinct from atherosclerosis

“Lotus root” recanalization with calcification
Case #6

Enlarging LAD aneurysm
Enlarging Giant Aneurysm

- Acute KD age 6 years
  - Complicated by 8mm RCA aneurysm and 9 mm LMCA and LAD aneurysm
  - Treated late with IVIG, subsequently managed with warfarin + ASA
- Asymptomatic
- At age 16 years: serial angiograms confirmed that the LAD aneurysm was enlarging
Aneurysm Trimming

- Surgery for 30 mm LAD aneurysm:
  - LIMA to LAD
  - Pericardial patch directing the LM into the Circ
  - RIMA to RCA
Case #7

Progressive Stenosis
Progressive Coronary Stenosis

- Acute KD at age 18 months
  - 8 mm LAD aneurysm, normal RCA
  - Maintained on warfarin and ASA
- Age 16 years, CTA showed stenosis of inlet and outlet of the LAD aneurysm
- Serial CTA’s demonstrated progressive narrowing
Clinical Challenge

- Is this a significant stenosis?
- If so, how should it be treated?
Conclusions

- Large thrombus burden can be managed with combination PCI and pharmacologic therapy
- Even small to moderate-sized aneurysms that “normalize” by echocardiography in childhood can lead to stenosis and thrombosis decades later.
Conclusions

- Failure to assess the extent of calcification may lead to suboptimal procedural outcomes.
- Coronary interventions without intravascular ultrasound may result in underestimation of vessel lumen diameter and under sizing stents.
- Patients with symptomatic peripheral aneurysms may benefit from endarterectomy or resection.
- Clinical issues are complex! Further studies are needed to guide best clinical practice.
Thank You!