Calcification after Cardiac Damage in Kawasaki Disease

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Summary

Coronary artery calcification is a well-documented late sequela of Kawasaki disease (KD), primarily in patients who developed coronary artery abnormalities (CAA) during the acute illness. It typically appears years later, is best detected by CT-based imaging, and carries ongoing risks including thrombosis, stenosis, and ischaemia. Lifelong, risk-stratified follow-up is therefore required.

Background & Scope

This report summarises current evidence on the development, detection, clinical consequences, and practical management of coronary calcification following KD. It is intended for clinicians including GPs, A&E physicians, paediatricians, adult cardiologists, and allied healthcare teams. Key evidence is drawn from imaging cohorts, pathological studies, and guideline statements.

Who Develops Calcification and When

- Patients with prior coronary artery abnormalities (dilatation or aneurysm) during acute KD have a high likelihood of later calcification.
- Patients with normal coronary dimensions in the acute phase have consistently low long-term risk.
- Calcification is typically detectable ≥5 years after KD, increasing in prevalence and severity after a decade, particularly in medium and giant aneurysms.

Pathology and Mechanisms

Histopathology demonstrates two principal processes:

1. Dystrophic/arterial wall calcification — due to long-standing vessel wall damage and reparative fibrosis.
2. Calcified organising thrombus — from organised aneurysmal thrombus. These explain the patchy and eccentric distribution of calcification, often co-localised with aneurysms or thrombosed segments.

Imaging Modalities

- Echocardiography: useful in acute paediatric settings but limited for detecting mural calcification, distal segments, or quantifying calcium burden in adolescents/adults.
- CT-based imaging (modern CT coronary angiography [CTCA] and non-contrast calcium scoring): most sensitive and practical for detecting, quantifying, and guiding management of coronary calcification.
- Cohort studies confirm high prevalence among those with aneurysms and near-absence in those with normal coronaries.

Clinical Consequences & Management

Risks:

- Calcified aneurysms increase risks of thrombosis, progressive stenosis, and myocardial ischaemia/infarction.
- Late myocardial events, including sudden cardiac death, have been reported in adults with prior KD.

Interventions:

- Revascularisation is technically more difficult in calcified segments, complicating PCI and grafting strategies.

Medical Therapy:

- Antiplatelet or anticoagulant use should be guided by aneurysm size, thrombus, and specialist input.
- Calcification does not alter the need for tailored antithrombotic therapy where otherwise indicated.

Guidelines & Recommended Approach

- Lifelong, risk-stratified follow-up is recommended for KD patients with coronary involvement.
- Transition to adult cardiology services with advanced imaging capacity is essential.
- For adolescents and adults with prior aneurysms, CTCA and calcium scoring should be considered in evaluating late coronary status and symptoms.
- Imaging intervals and modalities should be personalised to aneurysm severity and specialist advice.

Knowledge Gaps & Research Priorities

- Better longitudinal data to clarify calcification risk by aneurysm size (small, medium, giant).
- Clarification of prognostic value of calcium scoring beyond lumen stenosis or aneurysm morphology.
- Impact of acute-phase therapies and secondary prevention on calcification trajectory.
- Optimisation of imaging pathways balancing sensitivity, radiation exposure, and clinical utility.

Conclusion

Coronary artery calcification is a significant late complication of Kawasaki disease, particularly in patients with prior aneurysms. CT-based imaging is the most reliable tool for detection and management. Given the lifelong risks, structured follow-up and specialist-led care remain essential, with further research needed to refine prognostication and surveillance strategies.

References

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