

BACKGROUND

- Coronary artery (CA) involvement in Kawasaki disease (KD) evolves over time and can lead to thrombosis, stenosis, and occlusion
- Screening for myocardial perfusion during periodic routine assessment is important
- Vasodilator stress cardiac magnetic resonance (CMR) provides excellent tool to risk stratify patients for major cardiac events
- Regadenoson is a selective CA hyperemia agent and has not been studied in children with KD
- Aim: to assess the safety, feasibility, and diagnostic utility of regadenoson stress CMR in children with KD and CA disease

METHODS

- Retrospective cross-sectional study
- All patients with KD who had a regadenoson stress perfusion CMR from August 2014 to December 2018
- Major events: heart block, arrhythmia, myocardial infarction, arrest, and death. Minor events: hypotension, nausea/vomiting, rash, chest pain, discomfort, bronchospasm, hospitalization
- Rest and stress perfusion imaging, high frame rate cine to assess wall motion, and late gadolinium enhancement (LGE) imaging were acquired on a 1.5 T clinical magnet (Phillips Ingenia)
- The initial CMR of each patient was used to assess agreement with X-ray angiography (XRA) or CT or whole heart sequence (CMR) of the CA within 6 months of the stress CMR

STUDY SUBJECTS (n = 32)

Age at onset (years), median (ranges)	4 (0.25-17)
< 1	12 (38%)
1-5	9 (28%)
>5	11 (34%)
Male, n (%)	20 (62)
Coronary artery anatomy	
Right dominant, n (%)	21 (65.6)
Left dominant	1 (3.1)
Co-dominant	1 (3.1)
Unknown	9 (28.1)
AHA Risk Levels	
I	1 (2%)
II	3 (7%)
III	7 (17%)
IV	6 (14%)
V	24 (58%)

- KD shock in 5 (16%) and recurrent KD in 4 (13%)

RESULTS

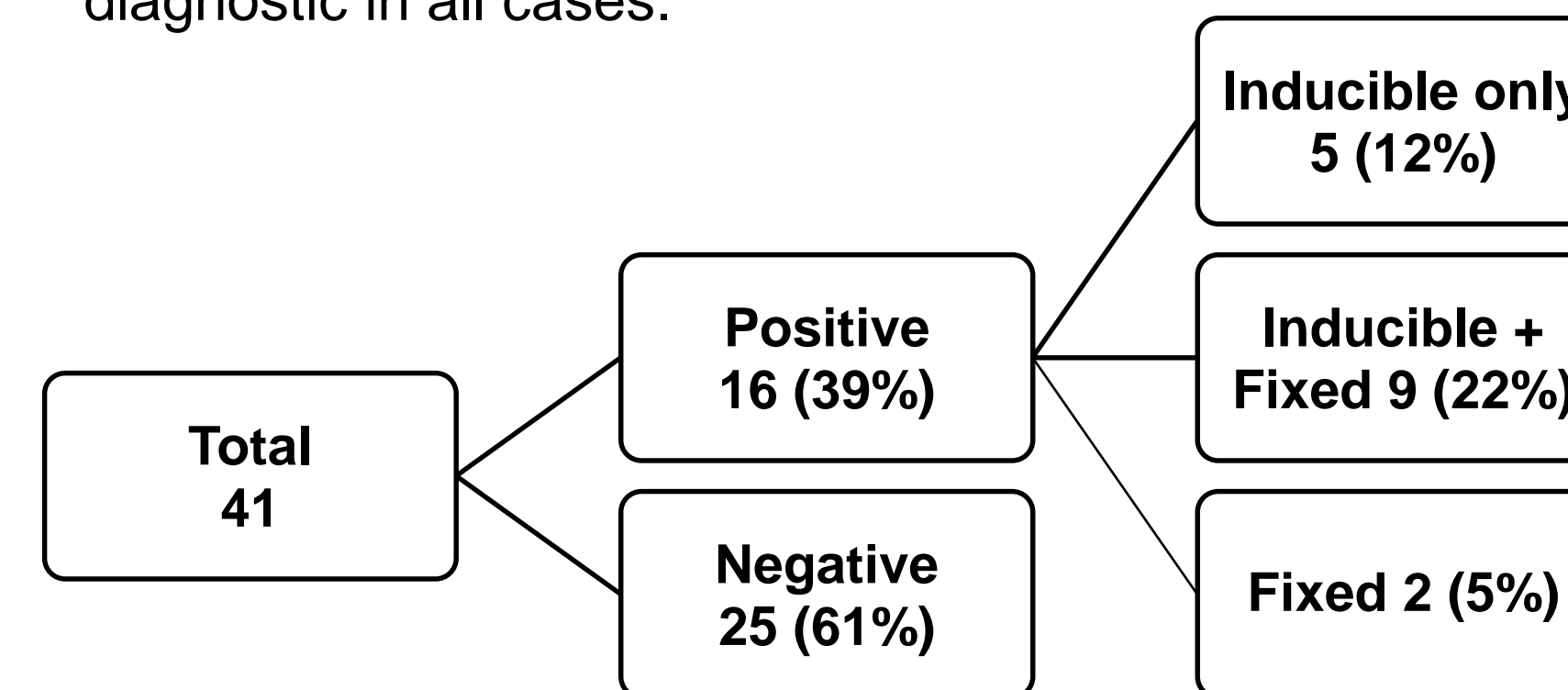
- 41 stress CMR were performed in 32 patients
 - Median age 11 (2-19) years
 - Median weight 41 (13-93) kg

HEMODYNAMICS CHANGES

	At rest	Peak stress	% Change	p
HR	78 ± 15	126 ± 16	48 ± 13	<0.001
SBP	104 ± 11	99 ± 15	5 ± 10	<0.001
DBP	57 ± 13	54 ± 14	4 ± 9	0.01
<i>HR, heart rate (bpm). SBP, systolic blood pressure (mmHg). DBP, diastolic blood pressure (mmHg). Values represented by mean and standard deviation.</i>				

FIRST PASS PERFUSION (FPP)

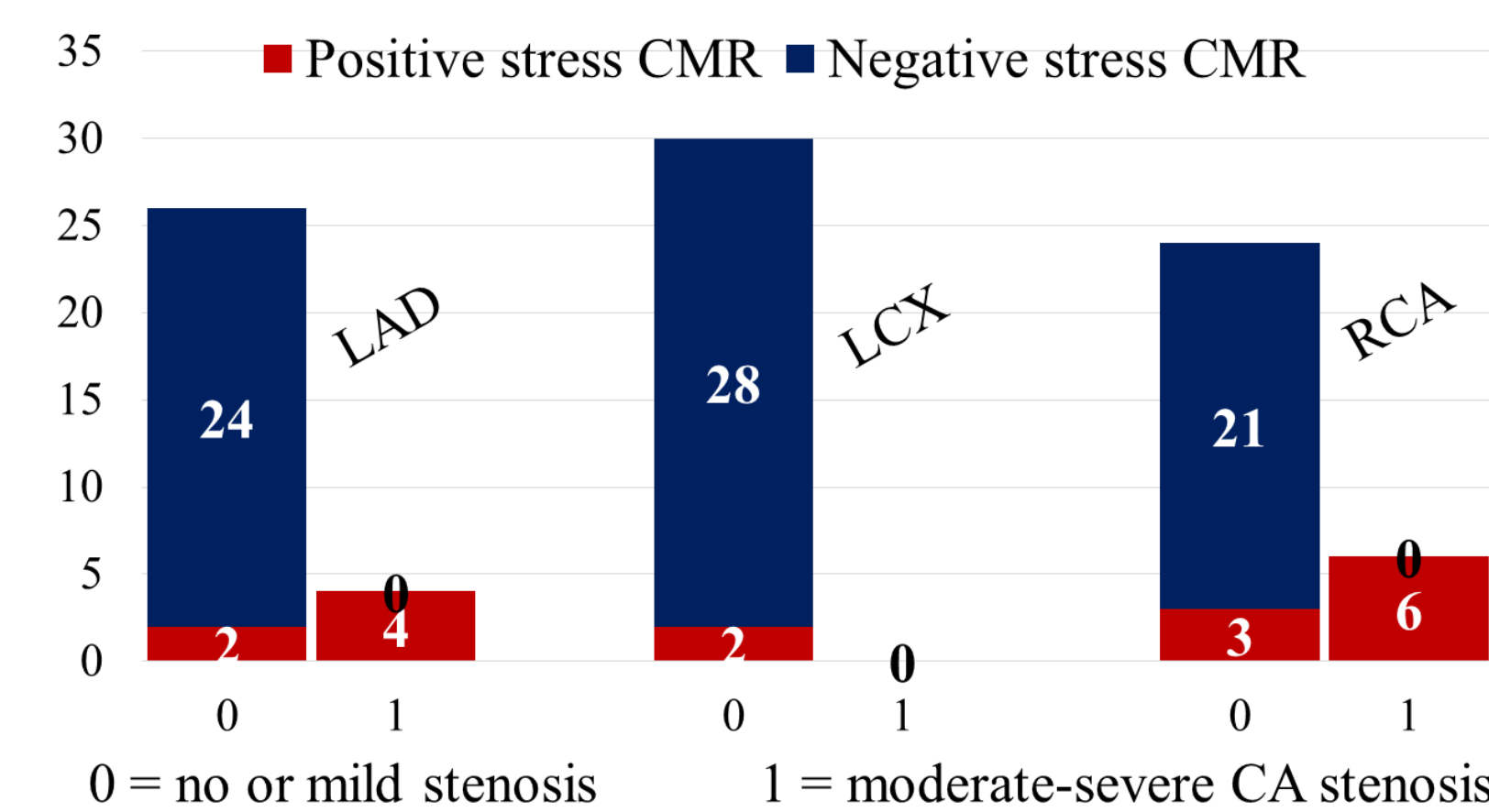
- All examinations were complete, and images were diagnostic in all cases.



ADVERSE EVENTS

	Sedated (18)	Non-sedated (23)
Major event	0	0
Minor events		
Hypotention	5 (28%)	1 (4%)
Nausea/vomiting	0	0
Rash	0	0
Chest pain	0	0
Discomfort	1 (6%)	0
Bronchospasm	0	0
Hospitalization	0	0
Total events	6 (33%)	1 (4%)

DIAGNOSTIC UTILITY



Distribution of CA stenoses and perfusion defects (n = 30)

PERFUSION and CORONARY ANGIOGRAPHY

Perfusion and XRA/CT/CMR for LCA and RCA (n=26)		
Variable (%)	LCA	RCA
Positive percent agreement	100	100
Negative percent agreement	90.9	85.7
Overall percent agreement	92.3	88.5

- 4 underwent revascularization
- No patients with negative stress CMR had a cardiac event during the study period.

LIMITATIONS

- Retrospective, single center study
- Small sample size
- Different imaging modalities to evaluate for CA stenosis

CONCLUSIONS

- Regadenoson is hemodynamically safe and feasible as a CA hyperemia agent in children with KD and CA disease
- Regadenoson stress CMR showed good agreement with angiography/CT/CMR and helped with decision making for revascularization
- Regadenoson stress CMR may be a viable non-invasive tool in pediatric KD to assess for myocardial ischemia.

DISCLOSURES

- No conflict of interest

