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Occult Coronary Artery Dilatation: An Unrecognized Category Of Coronary Involvement

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The authors report no potential conflict of interest related to this study

Introduction

- › Coronary artery involvement is the major complication of KD
- › Cut off definition with Z-score ≥ 2.5 is widely used and officially recommended
- › **CA Z-Score Progression or variation overtime** is not a criteria for case definition of CA involvement, unless it reaches a Z-score ≥ 2.5

Hypothesis

- › There are KD patients with CA involvement that is not accounted for by the current Z-Score ≥ 2.5 definition
- › Important variation in CA Z-score could be related to the transient **increased blood supply** due to inflammation/myocarditis in the acute KD phase.

Marked Variations in Serial Coronary Artery Diameter Measures in Kawasaki Disease: A New Indicator of Coronary Involvement

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Coronary artery dilation after Kawasaki disease for children within the normal range

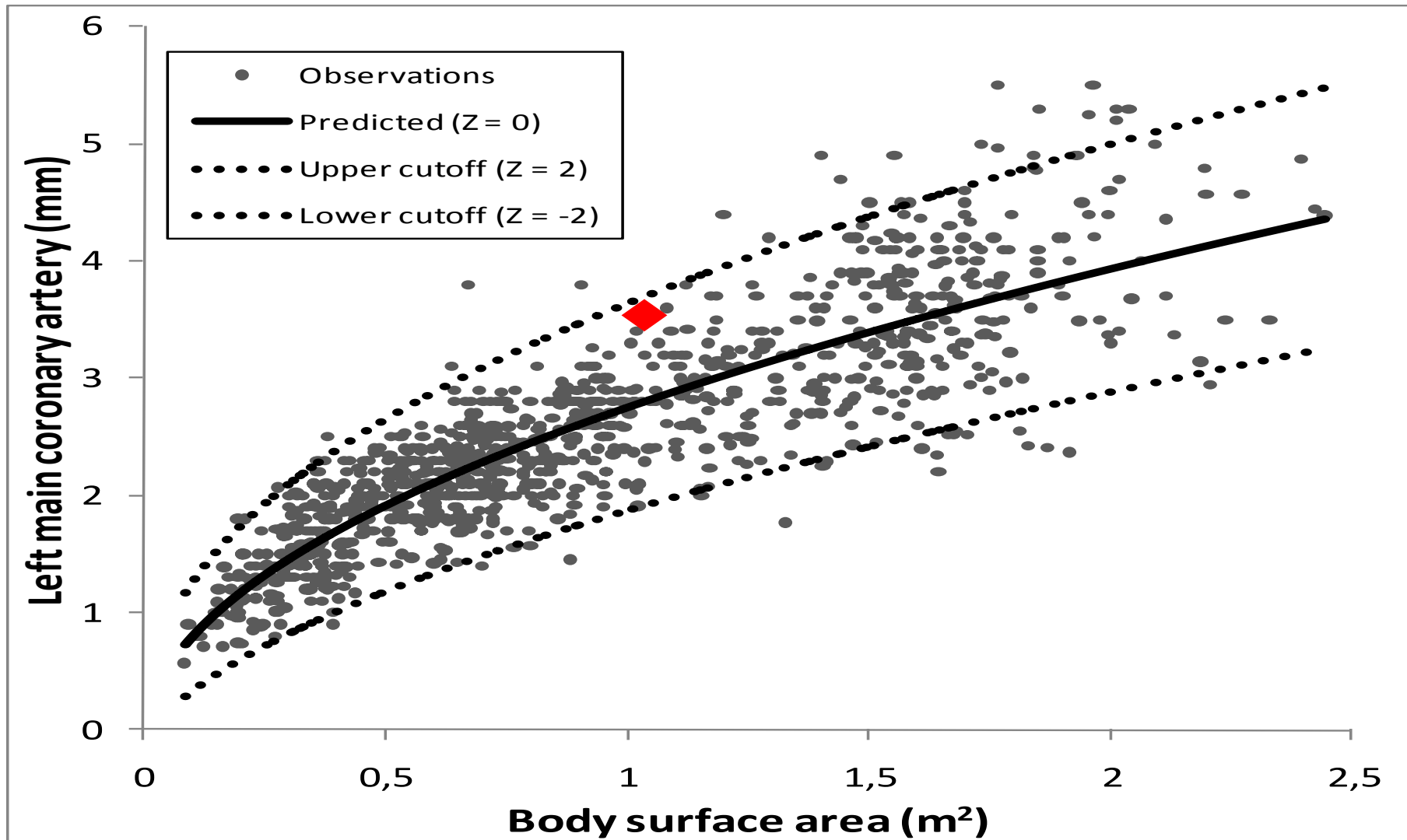
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Definition: Occult CAD = occult CA dilatation
Max Z-score < 2.5 & Δ -Z-score > 2 points



Objectives

Study CA diameter changes between onset and convalescence.

Better characterise the population of patients with occult coronary artery dilatations by evaluating the population demographic, inflammatory profile and evolution.

Methods

- › **Retrospective**
- › **One center**, Sainte-Justine UHC
- › Inclusion criteria
 - Kawasaki disease diagnosed and followed at our institution
 - January 2000 to November 2010
 - At least 2 echocardiographic studies between Dx and convalescent phase

Methods

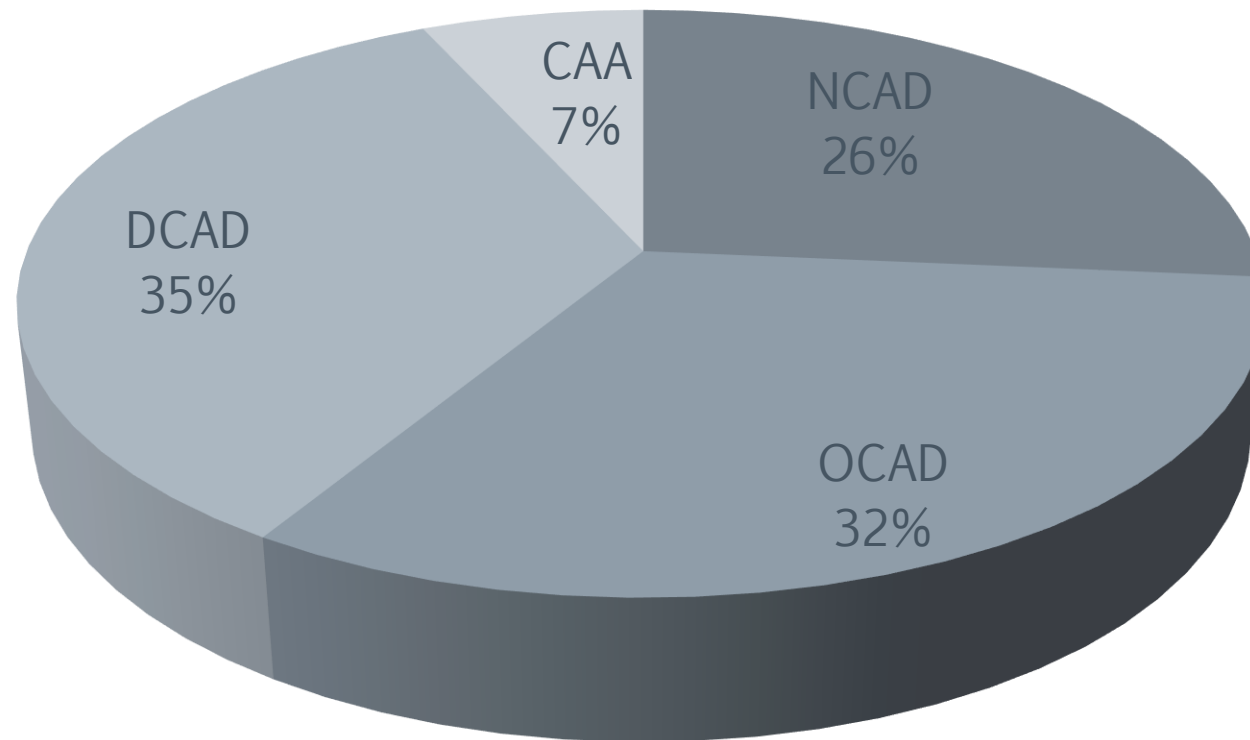
› Classification

- Coronary artery **aneurysm (CAA)**
 - › Patients documented with “aneurysm” on echocardiography report
- **Definite** coronary artery dilatation (**DCAD**)
 - › Z-score > 2.5
 - › No aneurysm
- **Occult** coronary artery dilatation (**OCAD**)
 - › Z-score < 2.5
 - › Z score Δ > 2 for the same CA
- **No** coronary artery dilatation (**NCAD**)

Results

- › There were 337 eligible patients
- › Age 3.4 [0.2-15] y.o.
- › 60% males
- › Complete KD 58% / Incomplete KD 42%
- › Dx at 7.1 ± 4.6 days of fever
- › Delayed Dx in 16%
- › CA measurements:
 - performed by trained sonographers for CA measurement

Figure 1 Coronary artery involvement distribution



N = 337

Table 1 Demographics and diagnostic features

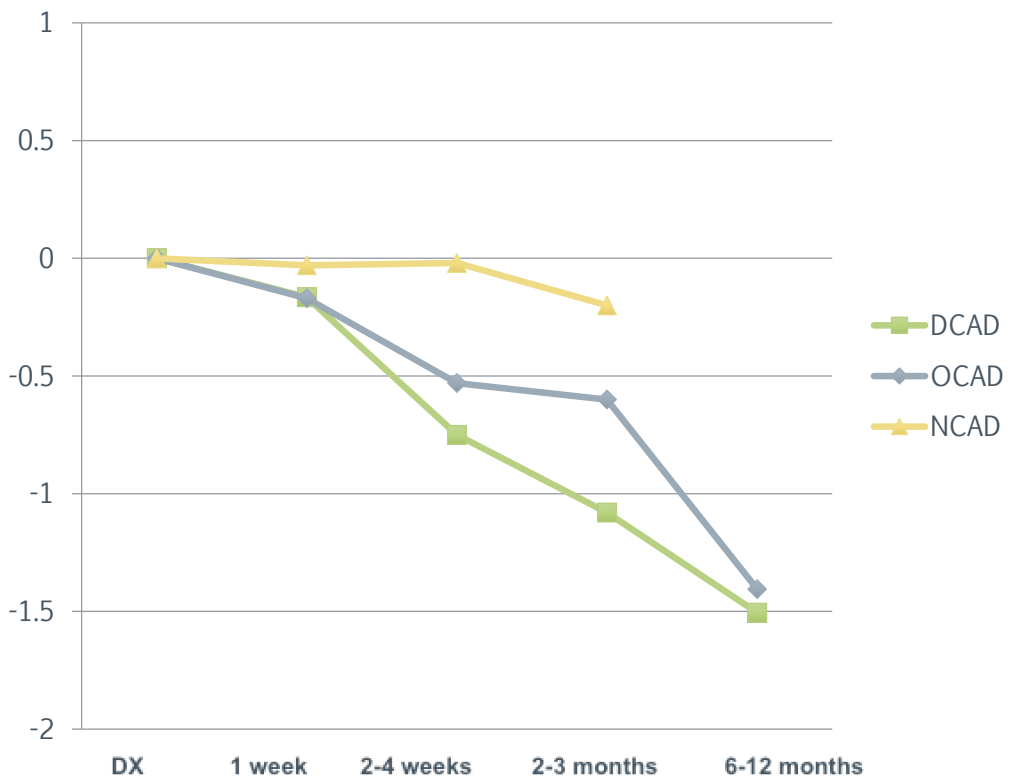
	NCA	OCAD	DCAD 41%	P value	P _{NCAD / OCAD}	P _{OCAD / DCAD}
	26%	32%				
Male gender	66 %	64 %	52%	0,12		
Age at diagnosis (yr)	3,2 ± 1,5	4,0 ± 1,8	3,1 ± 2,2	0,16		
Complete Presentation	42%	71%	56%	<0,01	0,02	0,07
Day of fever before diagnosis	7,8 ± 5,8	5,6 ± 2,6	7,5 ± 5,0	0,22		
Diagnosis > 10 days of fever	22%	7%	20%	0,02	0,02	0,03

Table 3 Inflammatory profile at dx

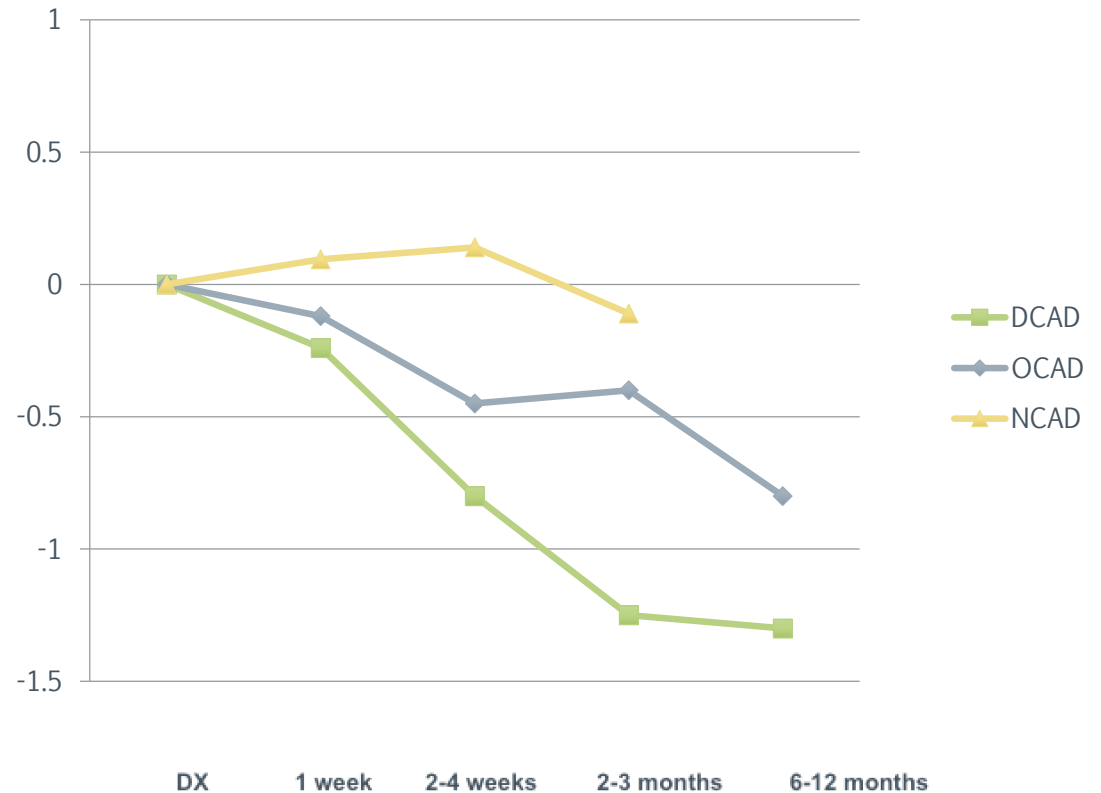
	NCAD	OCAD	DCAD	P NCAD / OCAD	P OCAD / DCAD	P NCAD/ DCAD
Albumin (g/L)	29,2 ±4,5	28,8 ± 6,2	27,0 ± 6,0	0,35	0,08	0,02
CRP (mg/L)	98,0 ± 63,6	112 ± 87	112 ± 102	0,23	0,67	0,24
ESR (mm/h)	49 ±11	49 ±10	46 ± 15	0,10	0,63	0,04
WBC (x 10 ⁹ /L)	13,53 ± 5,05	14,70± 7,8	14,96 ± 6,3	0,41	0,31	0,01
HT	0,327 ±0,024	0,323 ± 0,025	0,310 ± 0,040	0,08	0,01	< 0,01
PLT (x10 ⁹ /L)	370 ± 170	308 ± 114	455 ± 224	0,97	0,03	0,02

Figure 2 Median Z-score evolution similarity between OCAD & DCAD

LMCA



LAD



Z- score variation from onset

Table 2.2 Coronary artery progress by group

	NCAD	OCAD	DCAD	P _{OCAD / DCAD}
Time of detection maximal dilation	1 At dx	11 week 1-2	7,5 week 1-2	0,14
Time of detection maximal dilation without late dx	1 At dx	10,5 week 1-2	6 week 1-2	0,13
Diagnosis after 10 days of fever (late Dx)	22%	7%	20%	< 0,01
Treatment resistance (%)	6%	19%	34%	0,7
Treatment resistance without late dx (%)	4%	21%	36%	0,15

Conclusions

- › OCAD intermediate between NCAD and DCAD
 - Most inflammatory parameters
- › OCAD population is comparable to DCAD
 - Similar timing of CA involvement
 - Similar regression pattern
 - Similar treatment resistance
- › OCAD population had optimal treatment
 - More Complete presentation at diagnosis
 - Less diagnosis after 10 days of fever

Conclusions

- › By inference, patients with OCAD may need to be considered similar to those with CA Z-score ≥ 2.5 but without aneurysm
- › Such “dilation”, occult or definite, could be a physiological or pathologic vaso-motor reaction of the CA rather than a CA “**vasculitis**”
- › However our hypothesis and its clinical signification and long term morbidity should be assessed in a prospective trial

QUESTIONS?



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