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Long term outcome of Coronary Artery lesions after Kawasaki Disease in Children

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Abstract

The aims of this study were to describe and assess long term outcome of cardiac lesions after Kawasaki Disease (KD).
Material and Methods: The medical records of 417 patients referred for KD suspicion since 1988 were retrospectively reviewed.
Results: 210 patients met criteria for diagnosis of KD, at the age of 2.7±2.5years (median 2). Time to diagnosis was 7±4.6days (median 6days), time to hospitalization 5.7±4.3days (median 5days). Time to first echocardiography was 11.4±7.8days (median 9days), shorter in more recent period. Median time to intravenous immunoglobulin administration was 8 days (1 to 39). At initial evaluation, 63.8% were free from cardiac lesions, 23.8% (52 cases) had coronary artery lesions (CAL) (aneurisms : 25, dilatation : 27) and 12.4% had «hyperechogen» coronary arteries. Among CAL, 40 were <5mm in diameter, 9 were 5-8mm, and 3 were >8mm (giant aneurisms): one third localized on one coronary vessel, one third on 2 and one third one all 3 coronary arteries. Echographic pericarditis was found in 31 patients, mitral insufficiency in 20 and aortic insufficiency in 2. All patients recovered, except 1 who died from cardiogenic shock due to ruptured chordae. Coronary lesions resolved in 17of 52cases (32.6%) and persisted in 35 (67.4%, i.e. 16.7% of all patients): 14 with aneurisms and 19 with dilatations. No patient developed significant long-term coronary artery stenosis. The incidence of aneurisms was lower over the past decade (7.2%). Children with CAL were more likely to have pericardial effusion (OR 3.00, CI 1.34 – 6.72) and valvular regurgitation (OR 2.51, CI 1.22 – 5.16) at diagnosis. However, in case of CAL absence at first echocardiography, these abnormalities were not predictive of CAL at follow-up. Neither valvular regurgitation, nor systolic dysfunction, nor pericardial effusion was associated with persistence of CAL. Male gender, size of CAL, and resistance to immunoglobulin treatment were independent factors predictive of the persistence of CAL
Conclusion: The occurrence of coronary lesions in KD have lessened over time and long-term cardiac outcome is favourable despite persistent coronary lesions. Children with valvular regurgitation or pericardial effusion should have a careful assessment of coronary status at diagnosis.

Background and Aims

Although Kawasaki Disease (KD) is the most frequent acquired coronary disease in children and may severely impact on long term cardiac outcome; however, little is known about KD features in France

Aims of the study :

- Assess the characteristics of KD in France over a long period of time
- Describe cardiac KD lesions and outcomes

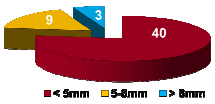
Material and Methods

From August 1983 to April 2007 / Single-center experience
Retrospective review of records
N = 417 patients with KD suspicion
N = 210 patients with diagnosis of KD
M / F = 125 / 85 = 1.5

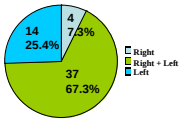
Results

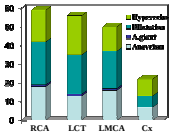
	Moy ± DS	Median	Min - Max
Age	2.7 ± 2.5 y	2 y	0.11 - 14.7 y
Time to hospitalization	5.7 ± 4.3 d	5 d	1 – 28 d
Time to diagnosis	7 ± 4.6 d	6 d	1 – 27 d
Time to first Echo	11.4 ± 7.8 d	9 d	1 – 45 d
Time to first Echo (>1997)	9.6 ± 6.9 d	7 d	1 – 36 d
Time to IVIG	8.2 ± 6.4 d	7 d	1 – 39 d

		N	%
No coronary lesion		129	63.8
Coronary lesions	**- Aneurism** (including giant aneurism)	**25**	**11.9**
	- Dilatation	**3**	**1.4**
		27	**12.9**
Hyperechogen coronary arteries		26	12.4
Mitral regurgitation		20	9.5
Aortic valve regurgitation		2	0.9
Pericarditis		31	14.8
TOTAL		***210***	***100***



Coronary lesions (n= 52)





Factors associated with CAL

Decreasing incidence > 1997 : 7.2%

	Univariate,analysis			Multivariate analysis		
	OR	CI	*P*	OR	CI	*P*
Male	1.76	0.9 – 3.2	0.08	2.99	1.1 -7.9	0.03
<6 mos or >5 yrs	2.24	1.1 – 4.2	0.01	3.73	1.4 – 9.8	0.01
LV SF <30%	0.68	0.2 – 1.9	0.49	NS	NS	NS
Pericardial effusion	3.00	1.3 – 6.7	0.01	5.26	1.5 – 18	0.01
Mitral regurgitation	2.51	1.2 – 5.1	0.01	NS	NS	NS
CRP	1.03	1 – 1.1	0.03	NS	NS	NS
Hemoglobin	0.50	0.3 – 0.6	<0.00001	0.59	0.4– 0.8	0.003
WBC	1.05	1.0 – 1.1	0.06	NS	NS	NS
platelet >450	4.00	1.5 – 10	0.004	NS	NS	NS
>2 day of IVIG	2.60	1.1 – 5.6	0.02	NS	NS	NS
Delay diag>10 d	3.81	1.7 – 8.2	0.001	NS	NS	NS
IVIG resistence	7.82	2 – 29.5	0.002	23.5	2.4 – 226	0.006

Outcome

Coronary arteries lesions
N = 52

Regression
N = 17
32.6%
(8.1% of total)

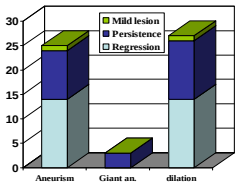
Persistence
N = 35
67.4%
(16.7% of total)

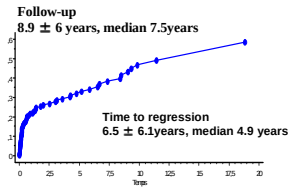
Normal
N = 17

Aneurisms
N = 16 (giant: 3)

Dilatations
N= 19

% of Total	**8.1%**	**7.6%**	**9%**





Factors associated with CAL regression

	Univariate analysis			Multivariate analysis		
	HR	**CI**	***P***	**HR**	**CI**	***P***
Male	0.16	0.34 – 1.20	0.18	0.52	0.27 – 0.99	0.05
Age >1 year	1.15	0.62 – 2.11	0.65	NS	NS	NS
Pericardial effusion	0.85	0.42 – 1.74	0.66	NS	NS	NS
Valvular regurgitation	1.43	0.60 – 3.42	0.42	NS	NS	NS
LV shortening fraction <30%	0.80	0.28 – 2.32	0.69	NS	NS	NS
CRP level (10 mg/L increase) §	0.96	0.93 – 0.99	0.04	NS	NS	NS
Hb level (10 mg/L increase)§	1.17	0.96 – 1.42	0.11	NS	NS	NS
WBC (1 G/L increase)§	1.00	0.99 – 1.00	0.60	NS	NS	NS
platelet >450 G/L in late phase	0.94	0.33 – 2.67	0.91	NS	NS	NS
Delay in diagnosis >10 days	0.83	0.42 -1.68	0.62	NS	NS	NS
>2 day-course of IVIG	0.93	0.46 – 1.92	0.86	NS	NS	NS
IVIG-resistance	0.24	0.07 – 0.78	0.02	0.27	0.09 – 0.94	0.04
Incomplete form of KD	1.24	0.67 – 2.31	0.50	NS	NS	NS
Number of involved coronaries	0.69	0.44 –1.08	0.10	NS	NS	NS
Proximal coronary involvement	0.70	0.21 – 2.72	0.55	NS	NS	NS
Max size of CAL (1mm increase)	0.59	0.43 – 0.79	<0.0001	0.52	0.43 – 0.81	0.001

Conclusion

The occurrence of coronary lesions in KD have lessened over time. Long-term outcome is favourable despite persistent coronary lesions

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