

IVIG 於川崎症的臨床應用

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全球前2%頂尖科學家

2024 臺灣臨床藥學會



- MD, National Yang-Ming University (傑出校友)
- PhD, Chang Gung University (傑出校友)
- 長庚大學醫學院教授 (優良教師*3)
- **World Top 2% Scientist (2020+2021+2022+2023)**
- 美國過敏氣喘免疫學院國際院士 (FAAAAI)
- **SCI Publications: 287 (162 in KD)**
- *Frontiers in Pediatrics*, Associate Editor
- *BMC Pediatrics*, Associate Editor
- *Medicine*, Associate Editor
- *Frontiers in Immunology*, Associate Editor
- *Children*, Associate Editor
- Award (120)
- Ranked Top expert of KD in the world (Expertscape since 2014)
- Ranked **Top 1** publications of KD 2012-2022 by *Frontiers in Pediatrics*.

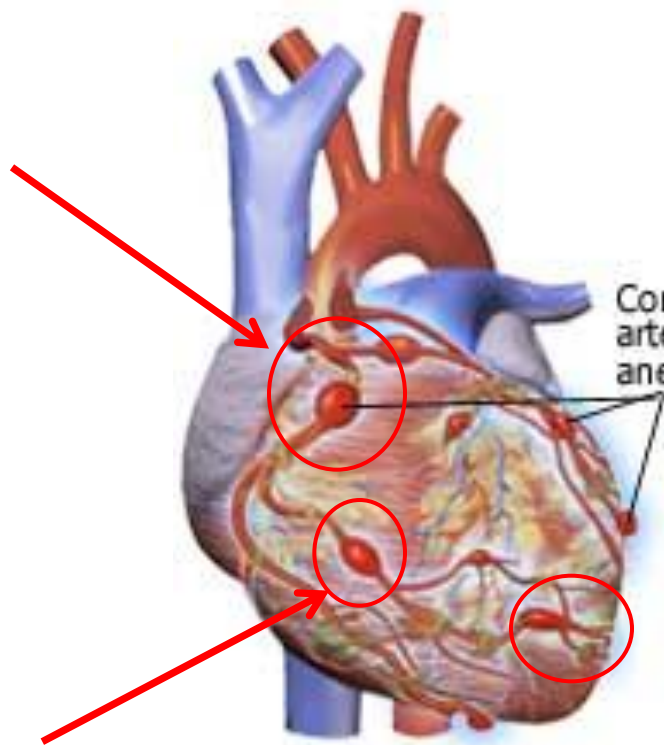


川崎症-兒童心臟殺手

Kawasaki Disease

A type of disease that primarily affects young children and believed to be caused by a non-contagious infection. Symptoms include:


- Pink eye
- Oral mucosal change
- Enlarged lymph nodes
- Patchy rash
- Peeling skin



© 2004 - Duplication not permitted

Kawasaki disease

a



b

指趾の特異的落屑を伴う小児の急性熱性
皮膚粘膜淋巴腺症候群

(自験例50例の臨床的観察)

日本赤十字社中央病院小児科 (部長: 神前章雄博士)

川崎 富作

(受付: 1月19日, 1967)

1967 → 1974 → 2024

> *Pediatrics*. 1974 Sep;54(3):271-6.

A new infantile acute febrile mucocutaneous lymph node syndrome (MLNS) prevailing in Japan

T Kawasaki, F Kosaki, S Okawa, I Shigematsu, H Yanagawa

PMID: 4153258

ARTICLES

A New Infantile Acute Febrile Mucocutaneous Lymph Node Syndrome (MLNS) Prevailing in Japan

Tomisaku Kawasaki, M.D., Fumio Kosaki, M.D., Sumio Okawa, M.D., Itsuzo Shigematsu, M.D., and Hiroshi Yanagawa, M.D.

From the Department of Pediatrics, Japan Red Cross Medical Center, and the Department of Epidemiology, Institute of Public Health, Tokyo

ABSTRACT. What may be a new disease has been afflicting infants and young children in Japan since 1960. It is an acute, febrile, mucocutaneous condition accompanied by swelling of cervical lymph nodes (tentatively called *mucocutaneous lymph node syndrome* [MLNS]). It may be misdiagnosed as scarlet fever, the Stevens-Johnson syndrome, or infantile periarteritis nodosa. The disease is now known to be widely occurring all over Japan with an increasing incidence each year. More than 6,000 cases have been reported as of 1973. One to two percent of the patients reported have died suddenly of cardiac failure. All the autopsies showed infantile periarteritis nodosa-like arteritis accompanied by coronary thrombosis and aneurysm. Some of the surviving cases have been shown to have similar changes. These findings lead us to believe that this clinical picture is a new clinical entity. Recently, rickettsia-like bodies were found by electron microscopy in biopsy specimens from the skin and lymph nodes of the patients. The bodies were isolated by yolk sac culture and their pathogenicity is now under investigation. *Pediatrics*, 54:273, 1974. MUCOCUTANEOUS LYMPH NODE SYNDROME, PERIARTERITIS NODOSA, INFANTILE PERIARTERITIS NODOSA.

supported by the Ministry of Health and Welfare of the Japanese Government, was organized under the chairmanship of Dr. Fumio Kosaki to elucidate the clinical, pathologic, epidemiologic and etiologic features of the disease.

This paper mainly deals with the clinical and epidemiological aspects of MLNS.

CLINICAL ASPECTS OF MLNS

Since the first case was seen by one of us (T. K.) in January 1961, 168 cases of MLNS have been observed in the Department of Pediatrics, Japan Red Cross Medical Center by the end of December 1972. During that period four sudden deaths occurred in infants with MLNS. Autopsy was performed on three of these infants and showed infantile periarteritis nodosa-like arteritis of the coronary artery accompanied by thrombosis and aneurysm.

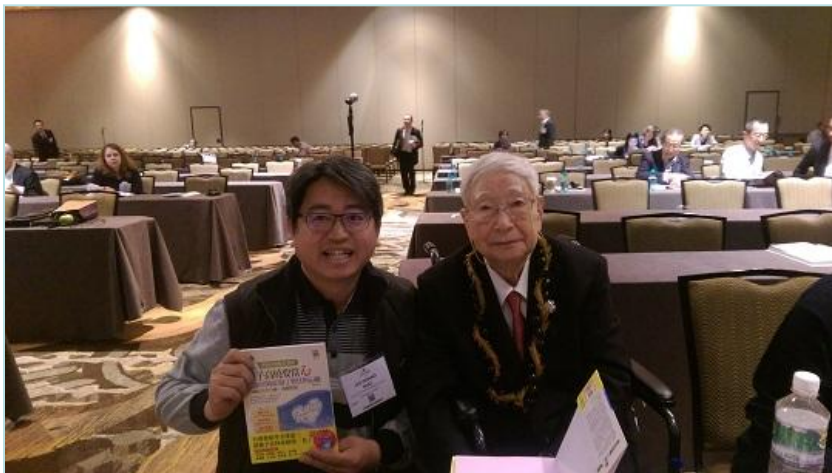
57年—病因仍未知



川崎富作 (Tomisaku Kawasaki)



2008 IKDS, Taipei, Taiwan.

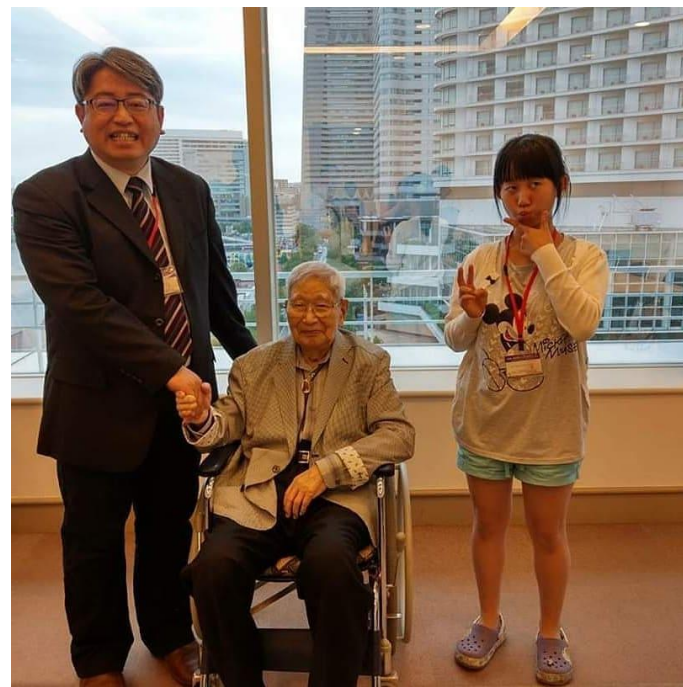


2015 IKDS, Hawaii.



2018 IKDS, Yokohama
20 abstracts from our team

川崎富作 (Tomisaku Kawasaki)

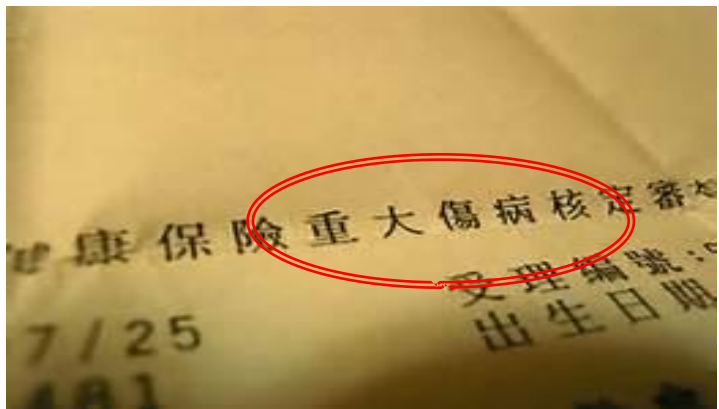


2018 IKDS, Yokohama

Kaohsiung 高雄



- 家長的無奈心聲：
- 來不及頒
- 乖寶寶獎狀，
- 卻先來了重大傷病卡
- ...



兒科最棘手疾病之首

- 台灣兒科醫學會經
- 近五百名兒科專科醫師會員，
- 票選出十大連兒科醫師都不免感到棘手的兒少疾病，依序為

• **川崎病 (KD)**、

- 心肌炎、
- 腸病毒重症、
- 腸套疊、
- 噬血症候群、
- 闌尾炎、
- 幼年型糖尿病、
- 幼年型類風濕關節炎、
- 腦膜炎及過敏性紫斑症。



1st difficult
to handle diseases

Diagnosis criteria

Table 1 Comparison of the diagnostic criteria of Kawasaki disease.

AHA criteria 2004	JCS 2008 Guidelines
Fever ≥ 5 days and at least 4 of the following 5	At least 5 of the following 6
Bilateral nonsuppurative conjunctivitis	The same
One or more changes to the mucous membranes including pharyngeal injection, dry fissured lips, injected lips, and strawberry tongue	The same
Indurative angioedema of the hands and feet including peripheral erythema, peripheral edema, periungual desquamation, and generalized desquamation	The same
Dysmorphic skin rashes	The same
Acute nonpurulent cervical lymphadenopathy >1.5 cm in diameter	The same
	Fever*

*Fever of more than 5 days is essential for diagnosis in AHA (American Heart Association) 2004 criteria but not in the JCS (Japanese Circulation Society) 2008 criteria.

How to make it easier to remember for parents?



Rapid memory method: 1-2-3-4-5



Table 1 "Kuo mnemonic" for the rapid memorization of the diagnostic criteria for Kawasaki disease

Number	Mnemonic	Clinical signs
1	"One" mouth	Diffuse mucosal inflammation with strawberry tongue and fissure lips
2	"Two" eyes	Bilateral nonpurulent conjunctivitis
3	"Three" fingers palpation of neck lymph nodes	Unilateral cervical lymphadenopathy
4	"Four" limbs – changes	Indurative angioedema over both hands and feet
5	"Five" = multiple skin rash	Dysmorphic skin rash



"Kuo Mnemonic"

郭式速記法

一個嘴巴

嘴唇乾裂+草莓舌



T area skin rash

二個眼睛紅



三隻手指觸摸頸部淋巴結腫



四肢末端紅腫



四肢末端脫皮



五告多-皮膚疹



卡介苗接種處紅腫



川崎症專有症狀

與5「有緣」的川崎症

好發於

連續高燒超過

典型症狀有

台灣盛行期在

5

歲以下幼童

天

項

月



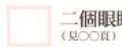
川崎症快檢 1-2-3-4-5 口訣

川崎症快檢



一個嘴巴
(見○○頁)

擴散性的口腔黏膜發炎；嘴唇乾裂、紅腫、出血或是合併草莓舌。



二個眼睛
(見○○頁)

紅眼睛，非化膿性且無疼痛，較常侵犯眼球的結膜或是眼白部。



**三隻手指
觸摸淋巴結**
(見○○頁)

頸部淋巴結腫大病變（單側大於 1.5 公分，有部分病童會雙側呈現）。



**四肢末端
腫脹發紅**
(見○○頁)

四肢末端充血浮腫、脫皮，發炎時就像穿上紅色的襪子和手套，脫皮時猶如金蟬脫殼一般的脫落厚皮。



**五多型性
皮疹**
(見○○頁)

一般發燒五天之內就會出現多型性皮疹。疹子是以不同的形式出現在軀幹和四肢，包括蕁麻疹、猩紅熱樣的皮膚紅疹、多樣性皮膚紅疹、丘疹、多形性紅斑，和較少見的小膿性疱疹，任何皮膚疹都可能與川崎症有關。



在台灣非常重要的指標症狀：卡介苗接種處 (BCG) 紅腫

中華川崎症關懷協會關心您！

臉書粉絲專頁：Kawasaki disease (川崎症)-Taiwan-郭和昌醫師(Ho-Chang Kuo)

高雄市烏松區大埤路123號 兒童醫院七樓 川崎症中心
電話：07-7317123轉8320
傳真：07-7352225
郵局劃撥帳號：42310238
戶名：中華川崎症關懷協會



發燒會燒壞心臟的--川崎症

郭和昌醫師

發燒燒壞的竟不是腦袋而是心臟，您不可不知的川崎症！

川崎症 (Kawasaki disease 或稱皮膚黏膜淋巴結症候群、川崎氏症、川崎病) 是一種全身血管發炎症候群，造成的原因仍不清楚。1967年由日本川崎富作醫師發現。台灣兒科醫學會於2010年，曾針對全國500多名兒科醫師進行問卷調查，結果川崎症被票選為「兒科10大棘手疾病」中的第一名。這一群對兒童最專業的醫師都對它感到十分傷透腦筋，那一般的家長，又怎能不認識它呢？

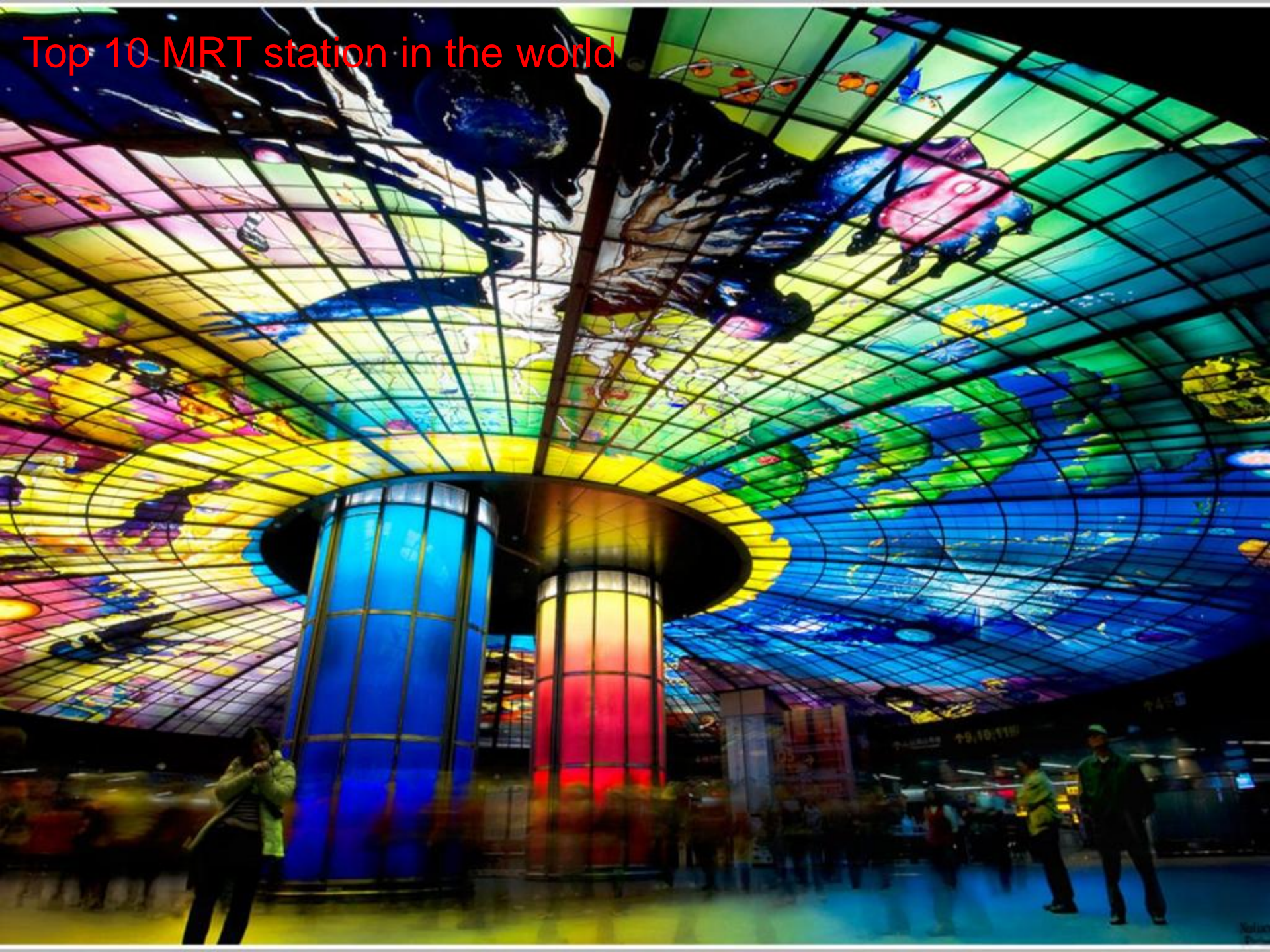
台灣的「川崎症」發生率已高居全世界第三，僅次於日本及韓國；每年有將近1000個新罹病個案；4~6月是高峰期，以5歲以下的兒童最常好發，若未能及時治療，將會造成心臟傷害且影響一生。許多家長都是於小孩子罹病之後，才開始想了解川崎症。因此，容易有錯過「黃金治療期」的危險，故最好的方法就是推廣認識這個疾病，讓家長都能事先謹慎的防範。

川崎症特色症狀，發燒斷續超過5天(耳溫>38度)，合併5診斷口訣「**1個嘴巴、2眼睛、3隻手指摸頸部淋巴腫、4肢末端紅腫脫皮、5全身皮疹**」中的2-3個症狀就需注意川崎症的可能並盡速就醫。數字「5」與川崎症密切相關，就是用**4個5**讓家長特別熟記症狀特色。首先是「**5歲以下**」、「**5天發燒**」、「**5大症狀**」、「**5月好發**」。台灣及他國有接種卡介苗的病童身上，還有個相當特別的症狀，就是卡介苗接種處常有出現紅腫或潰瘍。

川崎症雖然目前仍沒有辦法去預防它，但它卻是可以被治療的。於發燒的5-10天黃金治療期使用人類免疫球蛋白(IVIG)治療，可以大大降低心臟的傷害。因此，最好的預防方式，就是教大家去認識它，並把握疾病的即時診斷及治療期，川崎症也就可以徹底遠離您的寶貝了！

中華川崎症關懷協會
高雄長庚川崎症中心
關心您！

Top 10 MRT station in the world



AHA SCIENTIFIC STATEMENT

Diagnosis, Treatment, and Long-Term Management of Kawasaki Disease

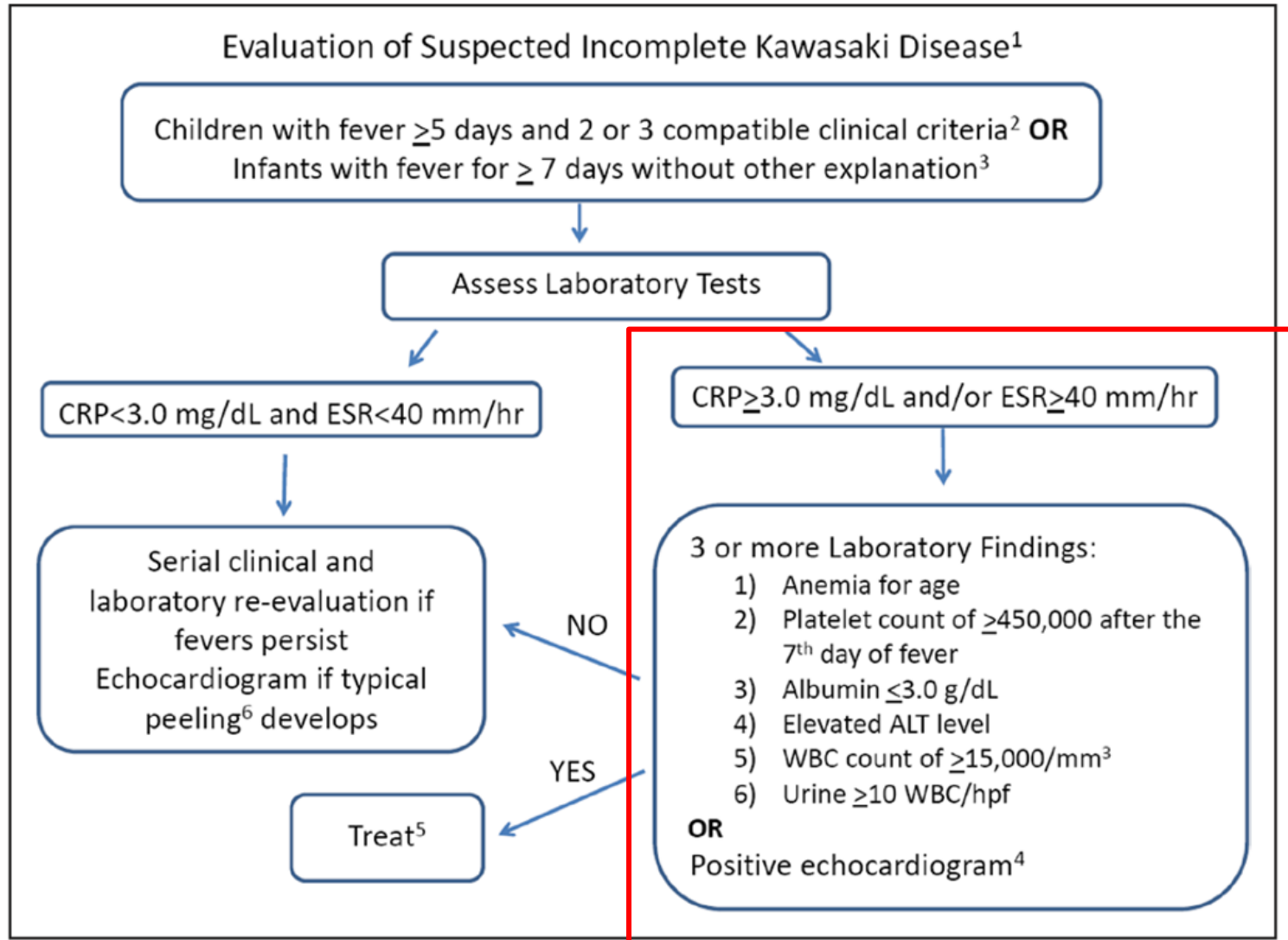
A Scientific Statement for Health Professionals From the American Heart Association

BACKGROUND: Kawasaki disease is an acute vasculitis of childhood that leads to coronary artery aneurysms in $\approx 25\%$ of untreated cases. It has been reported worldwide and is the leading cause of acquired heart disease in children in developed countries.

METHODS AND RESULTS: To revise the previous American Heart Association guidelines, a multidisciplinary writing group of experts was convened to review and appraise available evidence and practice-based opinion, as well as to provide updated recommendations for diagnosis, treatment of the acute illness, and long-term management. Although the cause remains unknown, discussion sections highlight new insights into the epidemiology, genetics, pathogenesis, pathology, natural history, and long-term outcomes. Prompt diagnosis is essential, and an updated algorithm defines supplemental information to be used to assist the diagnosis when classic clinical criteria are incomplete. Although intravenous immune globulin is the mainstay of initial treatment, the role for additional primary therapy in selected patients is discussed. Approximately 10% to 20%

Brian W. McCrindle, MD,
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Jane C. Burns, MD
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Pinak B. Shah, MD
Tohru Kobayashi, MD, PhD
Mei-Hwan Wu, MD, PhD
Tsutomu T. Saji, MD, FAHA
Elfriede Pahl, MD, FAHA

AHA supplementary criteria



History of IVIG in KD

- 1967: 發現川崎症
- 1981: Imback: IVIG in ITP (*Lancet*)
- 1983: Furusho: IVIG in 40 Japanese patients with KD (*Lancet*)
- 1986: US Multicenter KD Study Group: 168 KD patients, 400mg/kg x 4 d reduces CAA from 20% to 3-5 % (*NEJM*)
- 1991: US Multicenter KD Study Group: 549 US patients, **single infusion of 2 g/kg** superiors to 400mg/kg x 4d in reducing fever and inflammatory markers (*NEJM*)

Treatment

- IVIg 2gm/kg within 12 hours
- Aspirin:
 - 30-50 or 80-100 mg/kg/day (+/-)
 - 3-5 mg/kg/day (+)
 - Multiple centers trial of aspirin dosage in Taiwan



Treatment-超過十天還要治療嗎？

- Before 10 days
- Patients with a delayed diagnosis of KD (ie, later than day 10 of fever) may still be candidates for treatment.
- IVIG should also be administered to children presenting after the 10 day of illness (ie, in whom the diagnosis was missed earlier) if they have ongoing systemic inflammation as manifested by elevation of ESR or CRP (CRP >3.0 mg/dL) together with either persistent fever without other explanation or coronary artery aneurysms (luminal dimension Z score >2.5).
- Those in whom fever has resolved and laboratory values have normalized and whose echocardiograms are normal do not require IVIG treatment.

Pathology

- KD vasculopathy primarily involves muscular arteries and is characterized by 3 linked processes: (1) necrotizing arteritis; (2) subacute/chronic vasculitis; and (3) **luminal myofibroblastic proliferation (LMP)** .

- Large or giant coronary artery aneurysms ≥ 8 mm in diameter or with a Z score ≥ 10 **do not “resolve,” “regress,” or “remodel.”** They rarely rupture and virtually always contain thrombi (the oldest of which may calcify) that can become occlusive.

luminal myofibroblastic proliferation (LMP)

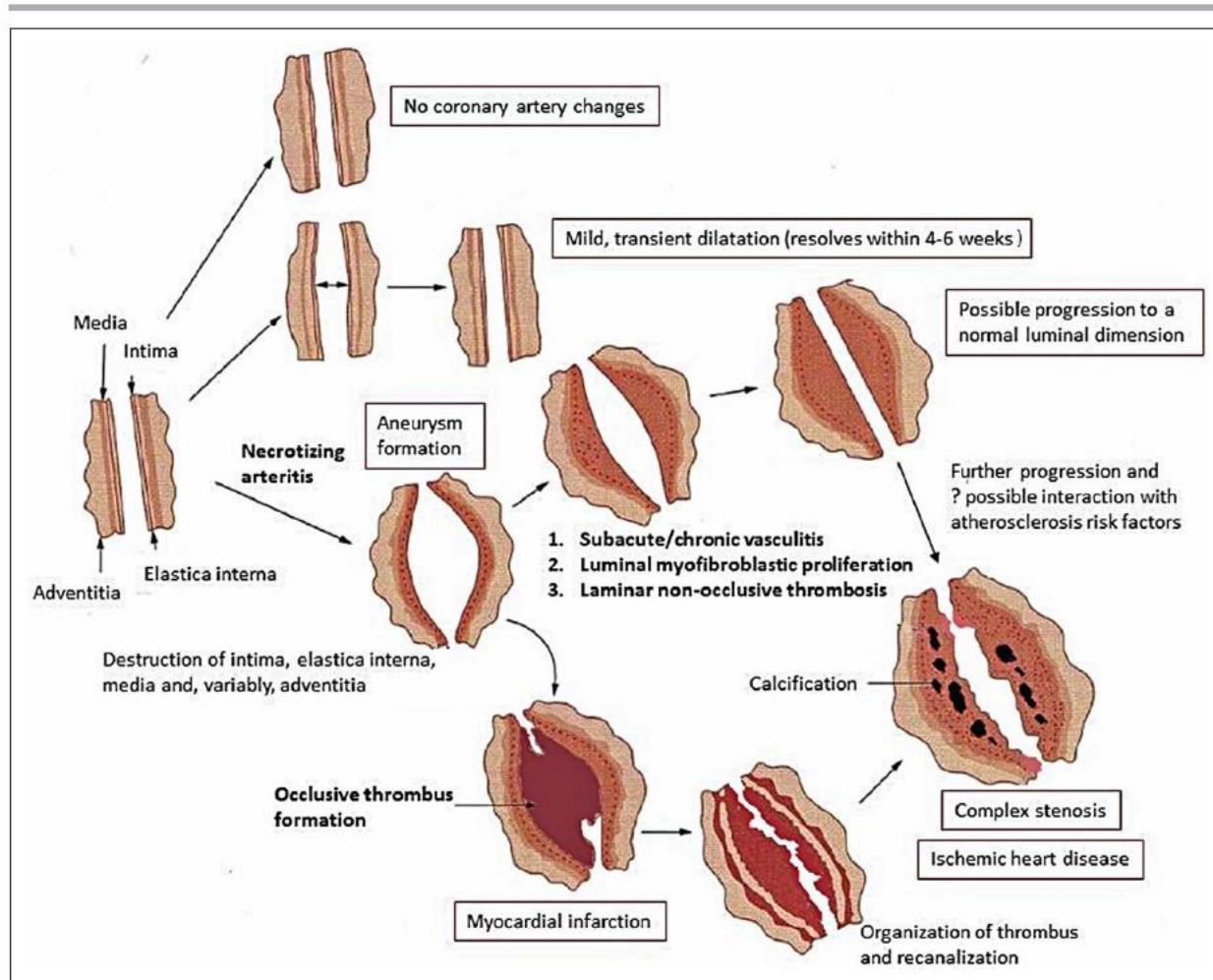


Figure 4. Natural history of coronary artery abnormalities.

Modified from Kato²⁵⁸ with permission from Elsevier. Copyright © 2004, Elsevier.

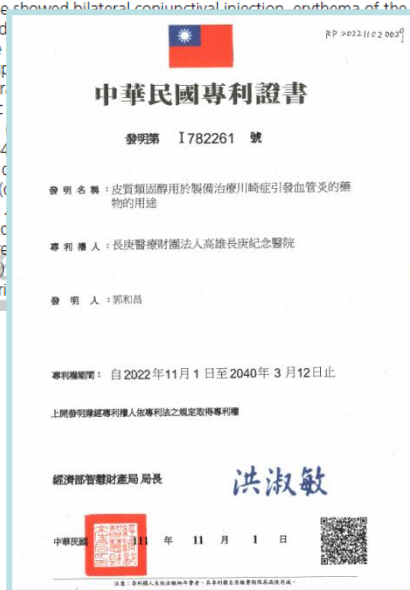
Giant aneurysm-完全回缩

Circulation: Cardiovascular Imaging

CARDIOVASCULAR IMAGES

Regression of Giant Coronary Aneurysm Validated by Echocardiography in Kawasaki Disease

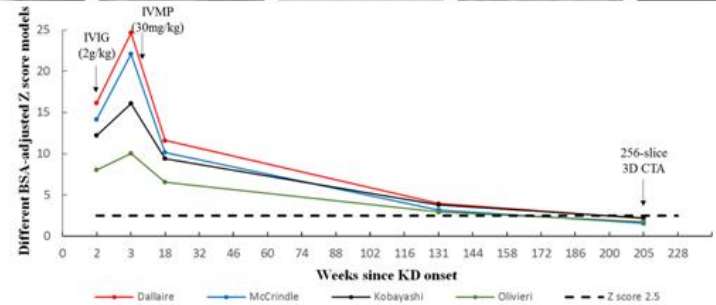
A previously healthy 5-month-old Taiwanese boy presenting with high fever for 10 days was admitted to a tertiary care hospital on July 22, 2016. Before admission, he showed bilateral conjunctival injection, erythema of the lips, swelling of the hand local clinic twice, but the treatment was mostly sup the periungual region, dr admitted to the pediatric evidence of leukocytosis (C-reactive protein; 72.64 of aspirin (5 mg/kg per d on day 3 of admission (c aneurysm (BSA-adjusted coronary artery (LCA) and score, 6.55–14.39, Figure immunoglobulin (2 g/kg) illness). After being afebrile therapy.



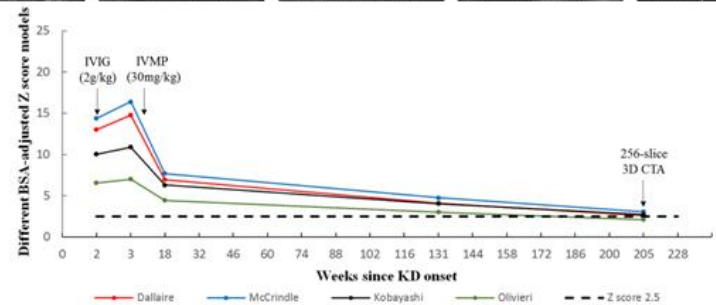
I-Hsin Tai[©], MD
Kai-Sheng Hsieh, MD
Chien-Chang Liao[©], MD
Ho-Chang Kuo[©], MD, PhD



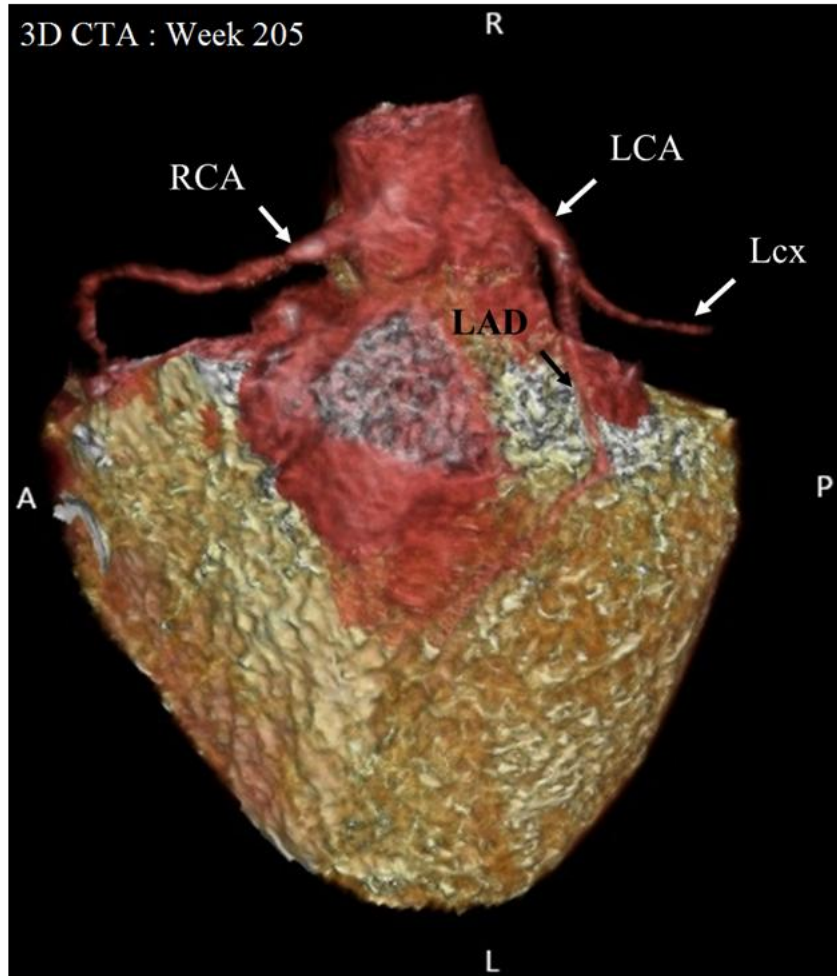
LCA Aneurysm Regression Timeline



RCA Aneurysm Regression Timeline



Giant aneurysm



Cardiac 256-slice computed tomography angiography (CTA) was performed one year later (205 weeks since KD onset), and the results showed **true regression** of the GCA in LCA without aneurysmal shape in the coronary vessel wall and near full regression in RCA aneurysm.

真实完全回缩

4天發燒—Diagnosis KD by AHA

Table 3. Diagnosis of CI

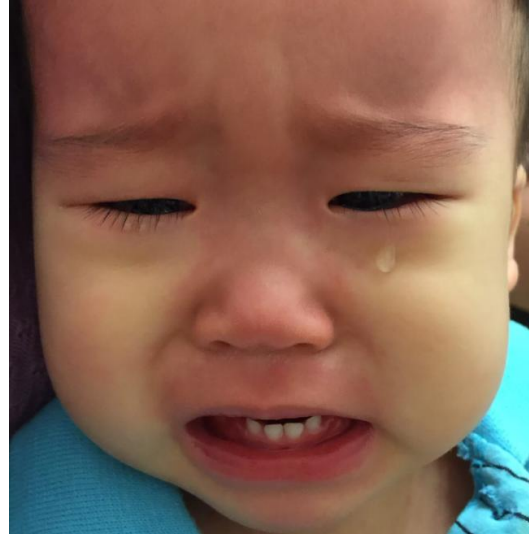
Classic KD is diagnosed in the p
day of fever onset is taken to be
least 4 of the 5 following princip
≥4 principal clinical features, pa
of the hands and feet are preser
with 4 d of fever, although exper
many patients with KD may establish the diagnosis with 3 d of fever in
rare cases (Figure 2):

AHA 4-4-4 规则

在 2017 年美国 AHA 的 KD 指南中，美国心脏协会承认发热持续时间存在争论；并且申明发热至少 4 天（而不是之前要求的 5 天）的患者仍然可以诊断出 KD，这些患者还出现了五种主要症状中的至少四种，而且一定要出现手掌或足底红斑或手足水肿。我们称之为“4-4-4 规则”（由郭教授命名）。

“4-4-4 rules” (coined by Prof. HC Kuo)

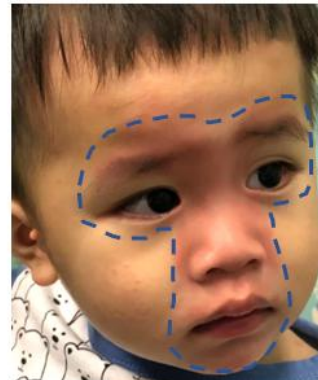
臉部特徵-T shape



(c)



(d)



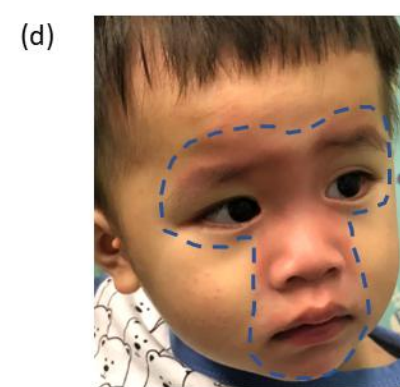
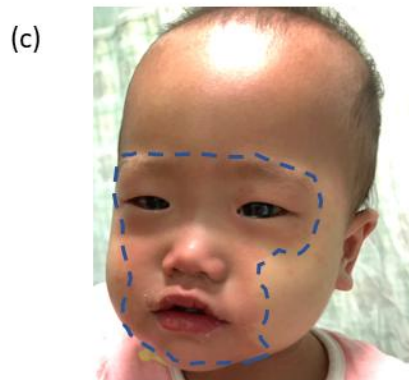
> QJM. 2023 Apr 17;hcad066. doi: 10.1093/qjmed/hcad066. Online ahead of print.

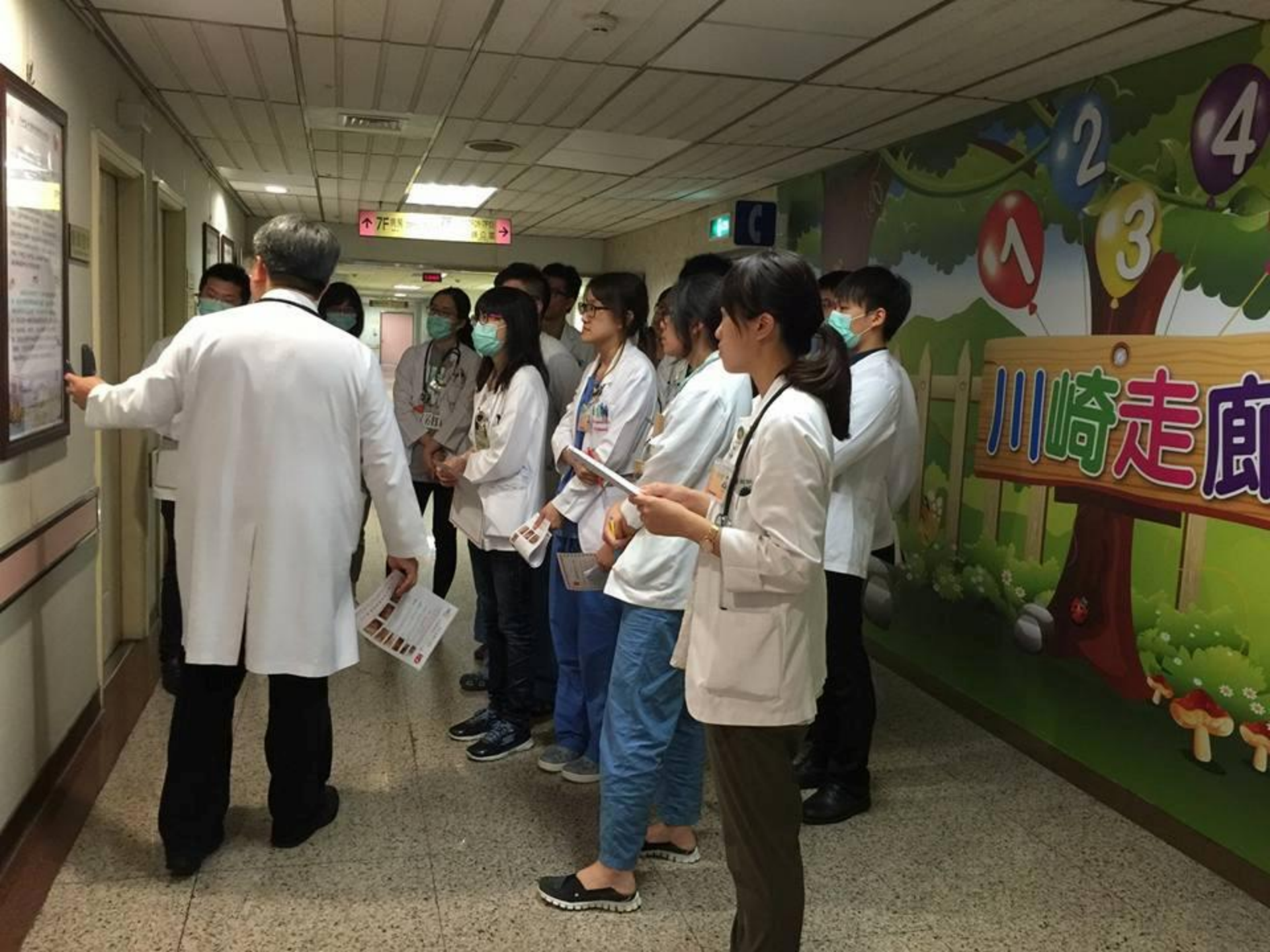
Distinctive "T-shaped" facial rash in Kawasaki Disease

Ho-Chang Kuo ¹

Affiliations + expand

PMID: 37067531 DOI: 10.1093/qjmed/hcad066





Efficacy of immunoglobulin plus prednisolone for prevention of coronary artery abnormalities in severe Kawasaki disease (RAISE study): a randomised, open-label, blinded-endpoints trial



Tohru Kobayashi, Tsutomu Saji, Tetsuya Otani, Kazuo Takeuchi, Tetsuya Nakamura, Hirokazu Arakawa, Taichi Kato, Toshiro Hara, Kenji Hamaoka, Shunichi Ogawa, Masaru Miura, Yuichi Nomura, Shigeto Fuse, Fukiko Ichida, Mitsuru Seki, Ryuji Fukazawa, Chitose Ogawa, Kenji Furuno, Hirohide Tokunaga, Shinichi Takatsuki, Shinya Hara, Akihiro Morikawa, on behalf of the RAISE study group investigators

Summary

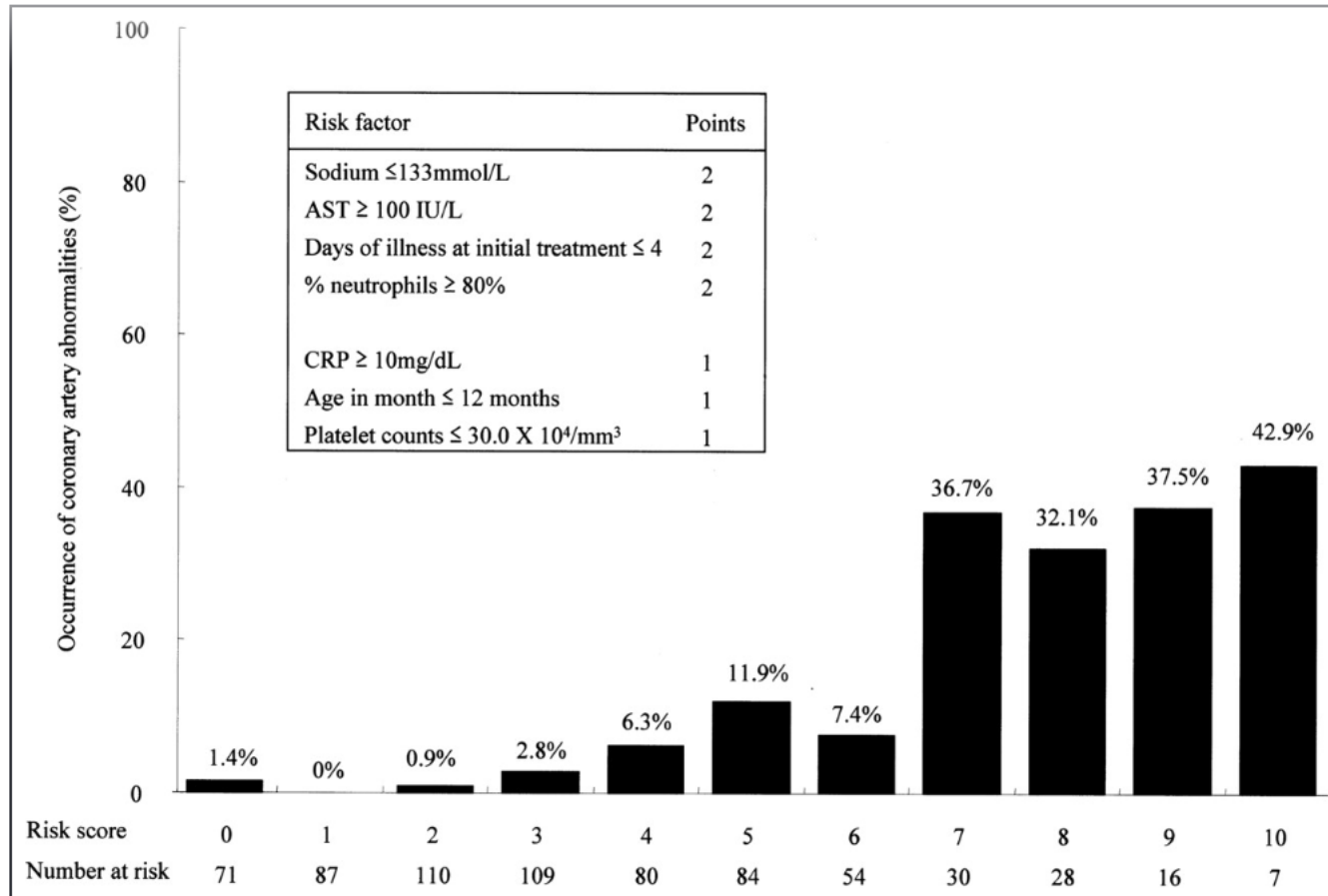
Background Evidence indicates that corticosteroid therapy might be beneficial for the primary treatment of severe Kawasaki disease. We assessed whether addition of prednisolone to intravenous immunoglobulin with aspirin would reduce the incidence of coronary artery abnormalities in patients with severe Kawasaki disease.

Methods We did a multicentre, prospective, randomised, open-label, blinded-endpoints trial at 74 hospitals in Japan

Lancet 2012; 379: 1613-20

Published Online
March 8, 2012
DOI:10.1016/S0140-
6736(11)61930-2

Kobayashi score



High risk group

prednisolone 2 mg/kg per day in three divided doses given by intravenous injection in 5 days. If fever resolved 5 days after prednisolone administration, the drug was given orally. When concentration of C-reactive protein normalised (≤ 5 mg/L), we tapered the prednisolone dose over 15 days in 5-day steps, from 2 mg/kg per day to 1 mg/kg per day to 0.5 mg/kg per day. We did laboratory testing two to three times per week until concentration of C-reactive protein had decreased to 5 mg/L or less.

High risk group

Findings We randomly assigned 125 patients to the intravenous immunoglobulin plus prednisolone group and 123 to the intravenous immunoglobulin group. Incidence of coronary artery abnormalities was significantly lower in the intravenous immunoglobulin plus prednisolone group than in the intravenous immunoglobulin group during the study period (four patients [3%] vs 28 patients [23%]; risk difference 0.20, 95% CI 0.12–0.28, $p < 0.0001$). Serious adverse events were similar between both groups: two patients had high total cholesterol and one neutropenia in the intravenous immunoglobulin plus prednisolone group, and one had high total cholesterol and another non-occlusive thrombus in the intravenous immunoglobulin group.

Interpretation Addition of prednisolone to the standard regimen of intravenous immunoglobulin improves coronary artery outcomes in patients with severe Kawasaki disease in Japan. Further study of intensified primary treatment for this disease in a mixed ethnic population is warranted.

CAL formation rate: 4/125 (3%) vs. 28/123 (23%), $p < 0.0001$

IVIG廠牌差異

Lessons from **Kawasaki disease**: all **brands** of **IVIG** are not equal.

Stiehm ER.

J Pediatr. 2006 Jan;148(1):6-8. doi: 10.1016/j.jpeds.2005.09.019.

Clinical responses of patients with **Kawasaki disease** to different **brands** of **intravenous** immunoglobulin.

Tsai MH, Huang YC, Yen MH, Li CC, Chiu CH, Lin PY, Lin TY, Chang LY.

J Pediatr. 2006 Jan;148(1):38-43. doi: 10.1016/j.jpeds.2005.08.024.

Resistance to **intravenous** immunoglobulin in children with **Kawasaki disease**.

Tremoulet AH, Best BM, Song S, Wang S, Corinaldesi E, Eichenfield JR, Martin DD, Newburger JW, Burns JC.

J Pediatr. 2008 Jul;153(1):117-21. doi: 10.1016/j.jpeds.2007.12.021. Epub 2008 Mar 4.

(38% in UCSD, year 2006, but not associated with IVIG brand or lot.)

(高雄長庚2014-2024, 6.28% IVIG-R in 687 KD)

院內KD	2014年	2015年	2016年	2017年	2018年	2019年	2020年	2021年	2022年	2023年	2024年	全球平均	平均
IVIG-R(%)	8.89	4.76	5.80	9.62	2.78	4.17	8.00	7.50	2.50	4.26	10.81	20.00	6.28

IVIG廠牌差異

Table I. Manufacturing and content information of 4 brands of IVIG products

	Brand A	Brand B	Brand C	Brand D
Manufacturer	Alpha Therapeutics	Bayer Therapeutics	Biotest Pharma	SNBTS/SPF Center
Trade name	Venoglobulin -S	Gamimune N	Intraglobin F	"CBSF" Human Immunoglobulin
Preparation	Cold ethanol-PEG precipitation, Plasmin digestion, DEAE-Sephadex fractionation	Cold ethanol-PEG precipitation, Acidification to pH 4.25	Cold ethanol-PEG precipitation, β -Propiolactonation	Cold ethanol-PEG precipitation, Diafiltration, Alkylation
Composition				
Protein (mg/mL)	47	51 \pm 2	50	50 \pm 5
Albumin (mg/mL)	<1.3	Not detected	0	Not detected
IgA (μ g/mL)	15.1	148 \pm 55	\leq 2500	940
IgM (μ g/mL)	<11.1	76 \pm 15	\leq 600	Not detected
Ig MWD				
IgG (mono)(%)		99		
IgG (dimer)(%)		<1		
IgG (poly)(%)	Mono+dimer >95 0.2-0.3	0	Mono+dimer \geq 90 \leq 3	Mono+dimer \geq 96.1 2.6
IgG subclass				
IgG 1 (%)	66.5	59.8	62.0	67.6
IgG 2 (%)	24.5	28.9	34.0	24.9
IgG 3 (%)	5.8	6.2	0.5	2.6
IgG 4 (%)	3.2	5.1	3.5	4.9
Used period	2001 Sep-2002 May	1994 Feb-1998 May, 1998 Sep-1999 Feb, and 1999 Sep-2001 Aug	1998 Jun-1998 Aug, and 1999 Mar-1999 Aug	2002 Jun-2003 Jul

SNBTS/SPF, Center Scottish National Blood Transfusion Service Protein Fractional Center; PEG, polyethylene glycol fractionation; DEAE-Sephadex, diethylaminoethyl-Sephadex, one kind of chromatography media used in ion exchange adsorption for IVIG purification and MWD molecular weight density.

Table III. Clinical responses in KD cases with IVIG treatment of 4 different brands

Factors	Total (N = 437)	Brand A (Alpha) (N = 91)	Brand B (Bayer) (N = 182)	Brand C (Biotest) (N = 93)	Brand D (CBSF) (N = 71)	P value
Fever after IVIG (days)	1 (0-20)	1 (0-11)	1 (0.5-6)	1 (0.5-20)	1 (0.5-8)	.69
Nonresponsiveness	29 (6.6%)	10 (11%)	2 (1%)	12 (13%)	5 (7%)	.001
CAA at acute stage	29 (6.6%)	5 (5%)	11 (6%)	7 (8%)	6 (8%)	.86
CAA at convalescence	17 (3.9%)	4 (4%)	3 (2%)	9 (10%)	1 (1%)	.01
Giant coronary aneurysm	3 (0.7%)	0 (0%)	0 (0%)	3 (3%)	0 (0%)	.03

Non-responsiveness to IVIG was defined if that patient had a fever that persisted for more than 2 days after completion of IVIG treatment and needed repeated IVIG treatment. P values were measured with Kruskal-Wallis test or χ^2 test.

Table IV. Factors associated with coronary arterial aneurysm at convalescence

Factors	CAA-positive (N = 17)	CAA-negative (N = 420)	P value
Age (months)	11 (3-70)	13 (1-108)	.97
Age \leq 12 months	9 (53%)	204 (49%)	.73
Age \leq 6 months	3 (18%)	67 (16%)	.86
Male sex	14 (82%)	260 (62%)	.09
Fever before admission (days)	5 (1-9)	5 (1-14)	.97
Fever before IVIG (days)	6 (5-13)	6 (5-18)	.33
Fever \geq 10 days before IVIG	4 (24%)	40 (10%)	.06
Initial WBC (15000/ μ L)	15600 (7300-20100)	14100 (5000-40200)	.60
Initial WBC \geq 15000/ μ L	10 (59%)	186 (44%)	.24
Initial Platelet (1000/ μ L)	403 (228-662)	358 (51-1440)	.07
Initial Platelet \geq 400K/ μ L	9 (53%)	144 (34%)	.12
Initial Hemoglobin (mg/dL)	10.8 \pm 1.2	10.8 \pm 1.1	.70
Initial Hemoglobin \leq 10 mg/dL	3 (18%)	135 (32%)	.21
Initial CRP (mg/L)	88 (37-366)	95 (1-433)	.47
Initial CRP \geq 100 mg/L	8 (47%)	194 (46%)	.95
Using Brand C IVIG	9 (53%)	84 (20%)	.001

Data were shown as median (range) or mean \pm SD or number (%). P values were measured with Wilcoxon rank sum test or Student's t test or χ^2 test.

IVIG, prepared with **beta-propiolactone**, was most significantly associated with nonresponsiveness, CAA at convalescence, and giant aneurysm.

IVIG廠牌差異

Variability in Response to Intravenous Immunoglobulin in the Treatment of Kawasaki Disease.

Downie ML, Manlhiot C, Latino GA, Collins TH, Chahal N, Yeung RS, McCrindle BW.

J Pediatr. 2016 Dec;179:124-130.e1. doi: 10.1016/j.jpeds.2016.08.060. Epub 2016 Sep 19.

PMID: 27659027

A total of 182 patients nonresponsive to IVIG were matched (total n = 364)
Gammagard IVIG had higher IVIG-R.

Table II. IVIG brand associated with group of nonresponse

	<u>Complete response</u> n = 182	<u>Partial nonresponse</u> n = 123	<u>Complete nonresponse</u> n = 59	<i>P</i> value
Iveegam	119 (65%)*	32 (26%)	25 (42%)	<.001†
Gammagard	19 (10%)	38 (31%)*	18 (31%)*	<.001†
Gamunex	29 (16%)	38 (31%)*	11 (19%)	.01‡

Reported are frequencies.

*Statistical significance compared with complete responders.

†Complete nonresponse vs response.

‡Partial nonresponse vs response.

IVIG廠牌差異

In Taiwan, since 2008-2023, TBSF human immunoglobulin (CSL limited, Parkville VIC3052, Australia) has become one brand of IVIG/3 available and reimbursed by Taiwan's National Health Insurance (NHI)

Effectiveness of two same-manufacturer **intravenous** immunoglobulin for **Kawasaki disease**.

Wu KL, Lin MT, Chang YJ.

J Formos Med Assoc. 2024 Apr;123(4):517-522. doi: 10.1016/j.jfma.2023.11.014. Epub 2023 Dec 14.

Table 1
Manufacturing and content information of two brands IVIG products.

	TBSF(3g/50 mL)	Privigen(5G/50 mL)
trade name	TBSF(3g/50 mL)	Privigen(5G/50 mL)
Manufacturer	CBL Behring (Australia) Pty Ltd	CSL Behring AG
Protein Ig%	6 %	10 %
Excipient	Maltose	L-Proline
pH	4.25	4.8
Ig G content (%)	≥98	≥98
IgA content(mg/ml)	<0.025	<0.025
Ig G subclass		
IgG 1(%)	61 %	67.80 %
IgG 2(%)	36 %	28.70 %
IgG 3(%)	3 %	2.30 %
IgG 4(%)	1 %	1.20 %
Used period	2016.1–2017.7	2017.8–2018.12

Ig, immunoglobulin; ITP, idiopathic thrombocytopenia purpura; PID, pelvic inflammatory disease.

Table 3
Comparison between IVIG-responsive and IVIG-unresponsive patients.

	IVIG-unresponsive	IVIG-responsive	P value
	n = 18	n = 140	
Age (months)	27.4 ± 17.4	22.4 ± 17.4	0.106
Body weight (kg)	12.7 ± 3.9	11.4 ± 3.8	0.152
Male sex	10	97	0.241
Clinical symptom			
Fever before IVIG	5.3 ± 1.2	5.8 ± 1.4	0.346
Conjunctival injection	10	109	0.039
Change in the mouth or throat	14	118	0.483
Swollen lymph node in the neck	9	57	0.452
Changes in the hands and feet	9	45	0.133
BCG inoculation scar	3	36	0.402
Skin rash	16	113	0.399
Laboratory data			
Initial WBC, /uL (mean)	14487 ± 6420	13621 ± 4795	0.867
Initial Hb, g/dL (mean)	11.4 ± 1.2	11.2 ± 0.95	0.488
Initial platelet, /L (mean)	289216 ± 139394	321978 ± 129847	0.275
Initial neutrophil, % (mean)	64.3 ± 15.7	56.6 ± 16.1	0.044
CRP, mg/L (mean)	13.5 ± 8.1	7.4 ± 5.8	0.001
Formosa score (high risk)	12	30	<0.001
Clinical course			
Fever after IVIG (hours)	80.1 ± 62.4	12.9 ± 19.3	<0.001
Hospital stays	9.6 ± 6.9	4.6 ± 2.4	<0.001
Hospital stay after IVIG	9 ± 8.6	3.4 ± 1.8	<0.001
CAA initial	5	38	0.955
CAA at 1 month	3	11	0.216
CAA at 2 months	3	0	<0.001
Privigen IVIG	12	52	0.016

BCG, Bacillus Calmette–Guérin; CAA, coronary artery aneurysm; CRP, C-reactive protein; IVIG, intravenous immunoglobulin; Hb, hemoglobin; WBC, white blood cell; SD, standard deviation.

Compared with brand T, brand P prolonged the fever and hospitalization durations after IVIG treatment and increased the proportion of IVIG treatment unresponsiveness, but it did not infer the coronary arteries sequelae. (N=158)

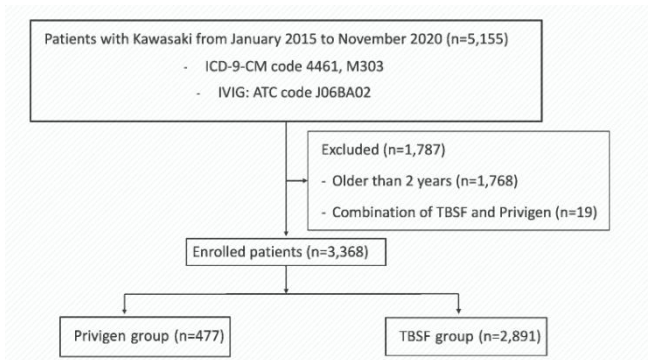
IVIG廠牌差異

Comparative effectiveness of two **intravenous** immunoglobulin products in children with **Kawasaki disease**, a nationwide cohort study.

Kuo NC, Lin CH, **Lin MC.**

Sci Rep. 2023 Oct 30;13(1):18629. doi: 10.1038/s41598-023-45092-5.

A total of 3368 KD cases involving children under 2 years of age were enrolled from January 2015 to November 2020.



Outcomes	TBSF group (n = 2891)	Privigen group (n = 477)	OR	95%CI	P value
	n (%)	n (%)			
Primary outcome					
IVIG resistance	280 (9.7)	45 (9.4)	0.72	0.52–0.99	0.041
Secondary outcomes					
Coronary artery involvement	109 (3.8)	7 (1.5)	0.38	0.18–0.82	0.014
Recurrence	43 (1.5)	4 (0.8)	0.60	0.22–1.68	0.352

Table 3. Results of multiple logistic regression models for primary and secondary outcomes. Expressed as n (%), OR, Odds ratio; CI, Confidence interval; IVIG, Intravenous immunoglobulin; TBSF, Taiwan Blood Services Foundation.

Privigen might have a lower rate of IVIG resistance and reduced coronary artery involvement.

第二代 "國血製劑益康" 製程昇級

結合國血製劑及商用 IVIg 的優點

Characteristic	國血TBSF IVIG (50mL)	國血 Privigen TW (50mL)	CSL商用 Privigen(50mL)
商品名	國血製劑益康 (人類免疫球蛋白靜脈注射劑)	第二代"國血製劑益康"(人體免疫球蛋白靜脈注射液 10%)	貝靈 (瑞利動人體免疫球蛋白靜脈注射液 10%)
健保價	3g健保價5400	5g健保價9000	5g健保價9000
健保碼	KC00842248	KC01238248	KC00965248
許可證	衛署菌疫輸字第000841號	衛部菌疫輸字第001238號	衛部菌疫輸字第000965號
製造廠名稱/產地	CSL Behring (Australia) Pty Ltd	CSL Behring (Australia) Pty Ltd	CSL Behring Switzerland
Protein Ig %	6%	10%	
賦形劑	Maltose	L-Proline	
pH	4.25	4.8	
IgG content (%)	≥ 98%	≥ 98%	
IgA content (mg/mL)	<0.025	<0.025	
儲存條件	2°C to 8°C (Refrigerate. Do not freeze).	Do not store above 25 °C. Do not freeze.	
血漿製備來源	台灣	台灣	歐洲
外觀/包裝			



第二代 "國血製劑益康" 製程昇級後 有更廣泛的臨床適應症使用

Characteristic	國血TBSF IVIG (50mL)	國血 Privigen TW (50mL)	CSL商用 Privigen(50mL)
效期	3年	3年	3年
可用貨源/庫存	可供貨至2025年Q4	自2024年Q2後可供貨	持續有貨，但可轉成國血製劑
預計證照核發時間	已核發	已核發，衛部菌疫輸字第001238號	已核發
健保價核准時間	已核准	已核准	已核准
適應症	<ul style="list-style-type: none"> •原發性免疫不全症 (primary immune deficiency (PID))。 •由潛在疾病或治療所引發之次發性症狀性低伽瑪球蛋白血症。 •<u>"國血製劑益康"人類免疫球蛋白靜脈注射劑也可用於改善免疫調節機能，包括：</u> •原發性血小板缺乏性紫斑症 (Idiopathic Thrombocytopenic Purpura (ITP))，高危險出血的成人或小孩 ITP 患者；或者，手術前用以修正血小板數目。 •異體骨髓移植 (allogeneic bone marrow transplantation)。 •川崎氏症 (Kawasaki Disease)。 •Guillain-Barré 症候群 (Guillain-Barré Syndrome (GBS))。 	<p>作為替代療法</p> <ul style="list-style-type: none"> • 原發性免疫不全症(Primary immunodeficiency syndromes, PID)如： <ul style="list-style-type: none"> -先天性丙種免疫球蛋白缺乏症(congenital agammaglobulinemia)及丙種免疫球蛋白過低症(hypogammaglobulinemia) -常見變異性免疫不全症(common variable immunodeficiency) -嚴重複合型免疫不全症(severe combined immunodeficiency) -Wiskott-Aldrich氏症候群 • 慢性淋巴性白血病引致丙種免疫球蛋白過低與復發性細菌感染，且預防性抗生素治療無效的病人。 • 多發性骨髓瘤穩定期(plateau phase)引致丙種免疫球蛋白過低與復發性細菌感染，且施打肺炎鏈球菌疫苗無效的病人。 • 異體造血幹細胞移植後引致丙種免疫球蛋白過低。 • 先天性愛滋病(AIDS)伴隨復發性細菌感染者。 <p>作為免疫調節</p> <ul style="list-style-type: none"> • 免疫性血小板缺乏紫斑症(Immune thrombocytopenic purpura, ITP)，且具高出血風險或用於手術前矯正血小板計數 • 格林-巴利症候群(Guillain-Barré Syndrome) • 川崎氏症(Kawasaki Disease) (與乙醯水楊酸(acetylsalicylic acid)一起使用；請參閱"劑量/用法"章節。) • 慢性脫髓鞘多發性神經炎(Chronic inflammatory demyelinating polyneuropathy, CIDP)，對孩童的使用經驗有限。 • 多灶性運動神經病變(Multifocal Motor Neuropathy, MMN) • 重症肌無力惡化(Myasthenia Gravis exacerbations, MG) • 藍伯-伊頓肌無力症(Lambert-Eaton Myasthenic Syndrome) • 僵體徵候群(Stiff Person Syndrome) 	

配合國血國用政策，推廣國血製劑益康

國血製劑益康優點包含：

- 1. 避免傳入他國傳染病：**使用國人的無償捐血的血漿做成的國血製劑，可以避免感染國外的傳染病。
- 2. 產品抗體適合國人：**其血液的成分及所含抗體較接近，較能預防本地之傳染病；也較少產生過敏之免疫反應。
- 3. 血漿採集受衛生主管機關的監督：**捐血中心採集過程及作業管理系統可以由國內的衛生機關就近監控，較易監督。



與藥師合作研究 (基礎研究)

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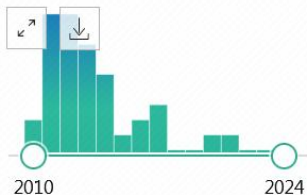
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1

of 4



RESULTS BY YEAR



PUBLICATION DATE

1 year

5 years



Functional correlations between CXCL10/IP10 gene polymorphisms and risk of Kawasaki disease.

1

Cite Hsu YW, Lu HF, Chou WH, **Kuo HC, Chang WC.**

Pediatr Allergy Immunol. 2021 Feb;32(2):363-370. doi: 10.1111/pai.13381. Epub 2020 Nov 6.

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PMID: 32989803



CYP2E1 Gene Polymorphisms Related to the Formation of Coronary Artery Lesions in Kawasaki Disease.

2

Cite Chang LS, Hsu YW, Lu CC, Lo MH, Hsieh KS, Li SC, **Chang WC, Kuo HC.**

Pediatr Infect Dis J. 2017 Nov;36(11):1039-1043. doi: 10.1097/INF.0000000000001657.

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PMID: 28650933

川崎症 vs. 基因

與藥師合作研究 (臨床藥師)

1



題 名：高劑量Aspirin於川崎症病人的治療角色:Therapeutic Role of High-dose Aspirin in Patients with Kawasaki Disease 

作 者：林燕縫 龐琇綾 劉淑貞 王郁青 郭和昌 Lin, Yeng-feng ; Pang, Hsiu-ling ; Liu, Shu-chen ; Wang, Lily Yu-chin ; Kuo, Ho-chang ;

書刊名 **藥學雜誌**

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頁 次：頁27-32

[TCI引用統計](#)

[國圖館藏目錄](#)

[全國期刊聯合目錄](#)

[電子期刊聯合目錄](#)

Multiple intravenous antibiotics usage is associated with intravenous immunoglobulin resistance in Kawasaki disease.

Lee ZM, Chu CL, Chu CH, Chang LS, Kuo HC.

Pediatr Neonatol. 2022 Mar;63(2):117-124. doi: 10.1016/j.pedneo.2021.06.020. Epub 2021 Oct 12.

PMID: 34716128 [Free article.](#)

(SCI IF: 2.4)

川崎症中心

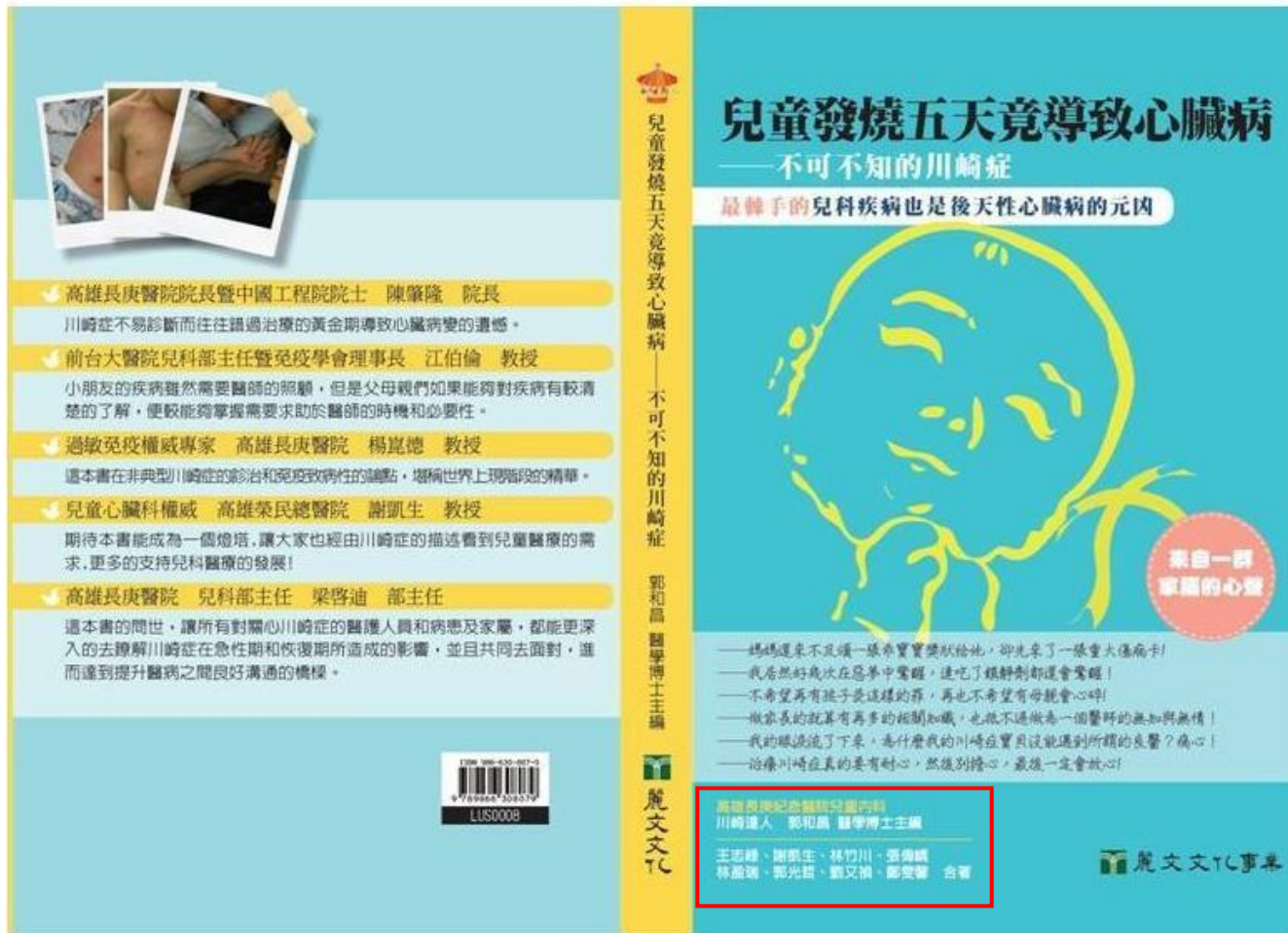
Kawasaki Disease Center



打造一個沒有哭聲的 兒科門診







ISBN : 9789577484451/957748445X

出版社：麗文文化事業股份有限公司, 出版日期：2011/08/15**

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Specific for KD parents

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高雄長庚紀念醫院 呼吸治療科
- 潘淑蘭 營養師
高雄長庚紀念醫院 營養師
- 顏芳儀 社服課
高雄長庚紀念醫院 社工師



Kawasaki Disease 川崎症

家裡有 5 歲以下小寶貝的家長們，您是否有聽過「川崎症」這個疾病呢？

2010年台灣兒科醫學會將川崎症票選為「兒童十大棘手疾病」第一名，由此可知這個會讓寶貝持續高燒不退、甚至造成後天性心臟的疾病，令多少的家長與醫師為它傷透了腦筋！

本書由研究川崎症已有多年豐富經驗及研究成果的郭和昌醫師，與高雄長庚紀念醫院「川崎症照護團隊」的兒科醫師、川崎症專家、兒童心臟科醫師、兒童過敏科醫師、中醫師、心理師、復健科醫師、藥師、護理師、專科護理師、營養師、呼吸治療師、川崎症個案管理師與社服單位，共同完成了這本擁有關於川崎症最詳盡資料的《川崎症口袋寶貝書》，提供家中小寶貝的家長們，認識、預防、對抗「川崎症」這個棘手疾病！

寶寶發燒心慌慌
KAWASAKI 診斷難
團隊齊心攻防戰
守護心線保健康

川崎症

口袋寶貝書

郭和昌醫師 主編

麗文文化



口袋寶貝書

郭和昌 醫師 主編
謝凱生 教授 校閱
高雄長庚醫院 合著
川崎症團隊

■ 主編
郭和昌 醫師
建國大學醫學士
長庚大學醫學博士
高雄長庚紀念醫院川崎症中心
中華川崎症關懷協會副理事長
美國邁阿密瑞克曼學院國際院士
(FAAAAI)

■ 插畫
張羽彤 同學
國立台中第一高級中學

中國大陸







Face book-川崎症醫師-郭和昌

中華川崎症關懷協會Kawasaki disease Taiwan-郭和昌醫師

粉絲專頁 訊息 通知 99 洞察報告 發佈工具

孩子高燒要當

別讓川崎症傷了寶貝

中華川崎症關懷協會
Kawasaki disease
Taiwan-郭和昌醫師
HoChang Kuo
@kawasakidisease

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中華川崎症關懷協會Kawasaki disease Taiwan-郭和昌醫師HoChang Kuo 新增了 15 張相片 — 和許雅琳與 Lim Lee Lee 在 高雄長庚兒童醫院川崎症中心
由 Eric Kuo 發佈 · 4月2日 · 高雄市 ·

每年的4-6月是台灣川崎症好發時期
五天的發燒
五歲以下小孩
五個特色症狀..... 更多



還有 12 張

已觸及801,144名用戶

2,872 人氣留言

6,344個分享

中華川崎症關懷協會Kawasaki disease Taiwan-郭和昌醫師HoChang Kuo 新增了 12 張相片 — 在 高雄長庚兒童醫院川崎症中心。
由 Eric Kuo 發佈 · 7月1日 21:31 · 高雄市 ·

六月底，七月初
川崎症仍然需注意
發燒4-5天的小孩
典型的川崎症症狀都出現
心臟血管已出現發炎..... 更多



還有 9 張

已觸及262,631名用戶

1,280 人氣留言

2,161個分享

> 10,000,000 reached, 50,000, 22,000 like and follow

- Baby sitter
- Kindergarten
- Mama class
- Doctors, Teachers.....



Promote awareness in hospital



衛教列車



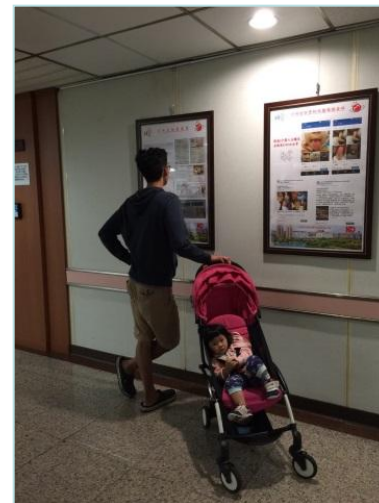
TV



corridor



這裡我們也提供專業的教學喔！



Promote awareness and medical education tool

Promote awareness by sport superstar



	TAI Tzu Ying
WORLD RANKING	
1	
WOMEN'S SINGLES	
CAREER WINS	AGE
338	24
WS + WD + XD	20/06/1994

Professional badminton player

Chien-Ming Wang	
	
Wang with the Kansas City Royals in 2016	
Pitcher	
Born: March 31, 1980 (age 38)	
Tainan City, Taiwan	
Batted: Right	Threw: Right

MLB baseball pitcher



第一版LINE貼圖於2017年3月正式發售

女大生打造川崎兒LINE貼圖 畫出5大病徵



黃瑪璇為中華川崎症關懷協會手繪兩款LINE貼圖，推廣認識川崎症病徵。林宏聰攝

郭和昌說，川崎症實屬罕見但能畫出寶貝可愛特徵，也要把川崎症的典型症狀畫出來，要可愛又要有用處，肯定黃瑪璇成功把兩者兼備得很好，讓使用者看到可愛的川崎症寶貝的同時，也能注意到地上的草莓舌紅腫、四肢末端紅腫等病徵。

至於以郭和昌為主角的貼圖，他特別喜歡以台灣為背景「這就愛台灣囉」這套，以及他關注的「我不要亂砍」等圖後，他笑說，聽朋友看到貼圖都認為十分傳神，但也有人抱怨「畫太美了」，讓他哭笑不得。

兩人因LINE貼圖合作獲好評，所得也將捐贈給川崎症協會，將繼續合作繪製川崎症本、T恤等，為認識川崎症及病童照護做更多不同面向的努力。(周麗平／高雄報導)

關節炎美少女操刀 川崎症LINE貼圖上架



高雄長庚醫師郭和昌(左)、風濕性關節炎美少女黃瑪璇(右)聯手打造2套LINE貼圖，藉由可愛娃娃、醫師造型宣傳川崎症病徵，提醒家長多注意。(林宏聰攝)

台灣川崎症好發率全球第三位，高雄長庚川崎症權威郭和昌創設的中華川崎症關懷協會為了讓更多人了解這個病症，委託罹患風濕性關節炎的21歲美少女黃瑪璇設計2套LINE貼圖，將川崎症眼紅、草莓舌、四肢末端皮膚疹的特徵融入可愛娃娃、醫師娃娃，上架20天以來已有5萬5000多次收發紀錄，販售貼圖的收入將全部用來為川崎症病童提供更多照護及衛教。

黃瑪璇說，去年5月接獲任務，花了3、4個月設計2套貼圖共80張造型，一套是川崎症實寶，一套則是郭醫師的Q版造型。今年3月15日成功上架，收入將用於病童衛教，短短2周內已累積5萬5000多次收發紀錄，宣傳效果十足。

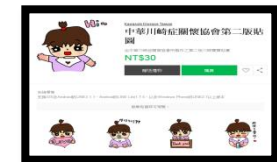


第二版LINE貼圖於2018年3月正式發售



第三版LINE貼圖於2018年3月正式發售

報導日期	報導媒體	報導標題
2017.03.26	聯合新聞網	小女生巧手慧心「川崎實寶」貼圖問世
2017.03.26	聯合新聞網	川崎實寶貼圖 請說川崎病病童
2018.04.20	聯合新聞網	女大生手繪川崎實寶貼圖 一度因「太暴露」遭凍結
2018.04.20	蘋果日報	女大生打造川崎兒LINE貼圖 畫出5大病徵
2018.04.20	新廣新聞 中廣新聞網	女大生與醫師合作 設計川崎實寶貼圖
2018.04.20	中天快點TV 中特電子報	關節炎美少女操刀 川崎兒LINE貼圖上架
2018.04.21	蘋果日報	愛心女大生 繪貼圖救川崎兒 與醫師合作畫5病徵發送紀錄逾5萬
2018.04.21	大愛新聞	2018.05 大愛新聞台於新聞時段播出



依照**症狀**來診斷的川崎症

認識 特徵

就是最好的預防

兒童健康 8成家長不識川崎症 子女錯過黃金治療期 可致心臟病

時事

讚好 0

分享

發佈時間: 2022/01/25

若兒童持續發高燒，切勿掉以輕心。小童群益會與香港兒科心臟學會去年11月進行一項問卷調查，成功訪問2896名幼稚園學童家長。調查結果顯示，8成家長不認識川崎症；而對於川崎症病徵的認知度，有54.7%家長知道「持續5天高燒」，52.2%知道「四肢及軀幹出現紅疹」，但只有35.1%知道「手腳持續泛紅及腫」和13.7%知道「卡介苗接種位置泛紅」。

川崎症繪本送偏鄉

公益認購 送偏鄉

守護偏鄉兒童 健康的心→無價！

已送出超過9000本



川崎 送偏鄉 繪本 公益認購

認購《小孩不見了：川崎症－教育繪本》

中華川崎症關懷協會邀請您
加入認購繪本的行列
將川崎症教育繪本送到台灣偏鄉

讓孩童、家長們認識兒童心臟殺手－川崎症
相信您的愛心，能守護孩子們健康長大！

主辦單位：中華川崎症關懷協會
執行單位：麗文文化事業機構



♥ 認購步驟 ♥

- 01 填寫認購表單並完成匯款
- 02 聯繫客服人員確認填寫內容並提供匯款帳號後五碼。
- 03 全新繪本採購及配送由中華川崎症關懷協會協助。
- 04 繪本捐送給受贈單位，認購者將收到回饋物品。



活動發起人：郭和昌 醫師
(全亞洲排名第一之川崎症專家)



認購表單



活動詳情

第一階段全台目標募集7,000本 一起加入我們的公益行列吧！

川崎症繪本送偏鄉

高雄市		高雄市杉林區杉林國民小學附設幼兒園 [846]高雄市杉林區杉林里12鄰合森巷41號	13
高雄市		高雄市杉林區集來國民小學附設幼兒園 [846]高雄市杉林區集來里16鄰通仙巷333號	6
高雄市		高雄市杉林區新庄國民小學附設幼兒園 [846]高雄市杉林區新庄里5鄰司馬路45巷5號	30
高雄市	杉林區	高雄市杉林區上平國民小學附設幼兒園 [846]高雄市杉林區上平里17鄰山仙路	10
高雄市		高雄市杉林區月美國民小學附設幼兒園 [846]高雄市杉林區月眉里8鄰清水路象寮巷39號	21
高雄市		高雄市杉林區月眉里24鄰和氣街15號 (07)6776031#601 幼兒園張主任收	28
高雄市		高雄市岱克拉部落互助教保服務中心(高雄市原住民族文教協會辦理) [846]高雄市杉林區大愛里5鄰合心路40巷12號 (07)6776074 杜老師收	16
高雄市	茄萣區	高雄市茄萣區興達國民小學附設幼兒園 [852]高雄市茄萣區興達里2鄰興達路2號	32

高雄市		高雄市內門區溝坪國民小學附設幼兒園 [845]高雄市內門區溝坪里3鄰廣福巷47號	12
高雄市		高雄市內門區景義國民小學附設幼兒園 [845]高雄市內門區永富里6鄰萊坑路8號	14
高雄市		高雄市內門區內門國民小學附設幼兒園 [845]高雄市內門區內豐里3鄰內埔路24號	22
高雄市	內門區	高雄市內門區觀亭國民小學附設幼兒園 [845]2275	
高雄市		高雄市內門區觀亭國民小學附設幼兒園 [845]24號	
高雄市		高雄市內門區觀亭國民小學附設幼兒園 [845]100巷	
高雄市		高雄市內門區觀亭國民小學附設幼兒園 [845]100巷	

高雄市	永安區	高雄市永安區新港國民小學附設幼兒園 [828]高雄市永安區新港里6鄰新興路25號	13
高雄市		高雄市永安區維新國民小學附設幼兒園 [828]高雄市永安區維新里1鄰維新路光明9巷69之10號	40
高雄市	大樹區	高雄市大樹區龍目國民小學附設幼兒園 [840]高雄市大樹區龍目里6鄰龍目路56號	23
高雄市		高雄市大樹區興田國民小學附設幼兒園 [840]高雄市大樹區興田里7鄰興田路59號	9
高雄市	旗山區	高雄市旗山區圓潭國民小學附設幼兒園 [842]高雄市旗山區中正里4鄰旗甲路三段179號	16
高雄市		高雄市旗山區嶺口國民小學附設幼兒園 [842]高雄市旗山區南勝里6鄰龍文巷30號	19



旗山圓潭國小附設幼兒園

川崎症繪本送偏鄉



茂林國小附幼



六龜幼兒園



>300
Starbucks
(mug and tumbler)

2022 KD textbook

歷時三年完成 (完整20章節)

共200頁 川崎症領域最完整的參考書籍

Kawasaki Disease

Ho-Chang Kuo
Editor

 Springer

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過去十年-全球第一

川崎症領域非常重要的一篇國際級SCI文章
分析報導統計過去十年 (2012-2022年)

全球川崎病的文獻計量和視覺分析，

發表於Front Pediatr. 2023

說明高雄長庚醫院為過去10年全球發表最多川崎症文章的單位。

frontiers | Frontiers in Pediatrics

TYPE Original Research
PUBLISHED 27 July 2023
DOI: 10.3389/fped.2023.1142065

Check for updates

Bibliometric and visual analysis of Kawasaki disease in children from 2012 to 2022

Zhengjiu Cui^{1,2}, Fei Luo^{1,2}, Jinjuan Wang², Juanjuan Diao² and Yueli Pan^{2*}

¹First College of Clinical Medicine, Shandong University of Traditional Chinese Medicine, Jinan, China, ²Department of Pediatrics, Affiliated Hospital of Shandong University of Traditional Chinese Medicine, Jinan, China

Background: In recent years, the incidence of Kawasaki disease among the pediatric population has experienced a significant increase. With complications mainly affecting the cardiovascular system, Kawasaki disease has received widespread attention from scholars worldwide. Numerous articles on Kawasaki disease in children have been published far. However, there is a lack of studies that use visualization methods to perform a bibliometric analysis of the relevant literature. This study aims to obtain overall information on the output characteristics of publications on childhood Kawasaki disease between 2012 and 2022 through bibliometric analysis, identify research hotspots and frontiers, and provide new ideas and references for future clinical and scientific research.

Methods: Literature meeting the inclusion criteria was screened from the Web of Science Core Collection, PubMed, and Scopus databases. Visual analysis of the literature by country, institution, journal, author, keywords, and references was performed using Citespace (6.1.R6), VOSviewer (1.6.18), and the online bibliometric website (<https://bibliometric.com/>).

Results: A total of 4,867 eligible publications were included. The number of annual publications is generally rising, rapidly increasing since 2019. Among countries and institutions, China and **KAOHSIUNG CHANG GUNG MEMORIAL HOSPITAL** have the highest output of articles. With 104 publications, **Ho-Chang Kuo** has a high impact in the field of KD. The most cited author is Jane W. Newburger. The most prolific journal is FRONTIERS IN PEDIATRICS. CIRCULATION is the most frequently co-cited journal. The most popular keyword in frequency and centrality is "immunoglobulin". The reference with the highest burst intensity was Verdoni L, LANCET, 2020.

TABLE 2 The top 5 institutions with the highest number of publications and highest centrality.

Rank	Institutions	Country	Publications	Institutions	Country	Centrality
1	KAOHSIUNG CHANG GUNG MEMORIAL Hospital	CHINA	161	China Medical University	CHINA	0.22
2	Chang Gung University	CHINA	150	Chang Gung University College of Medicine	CHINA	0.2
3	University	UNITED STATES	59	University of California San Diego	UNITED STATES	0.2
4	Chang Gung University College of Medicine	CHINA	5	China Medical University Hospital	CHINA	0.16
5		JAPAN	5	Boston Children's Hospital	UNITED STATES	0.15

TABLE 2 Top 10 institutions in the research field of IVIG resistance in Kawasaki disease.

Rank	Institution	Publications (n)	Citations (n)	Average number of article citations	Total link strength
1	Chang Gung (China)	32	629	19.66	49
2	Chang Gung Memorial Hospital (ornia San Diego (USA)	30	661	22.03	46
3		15	707	47.13	19
4	Sichuan University (China)	12	86	7.17	2
5	Guangzhou Medical University (China)	11	61	5.55	0
6	Soochow University (China)	11	129	11.73	0
7	Boston Children's Hospital (USA)	10	789	78.90	6
8	University of Tokyo (Japan)	10	40	4.00	22
9	Chong Qing Medical University (China)	9	262	29.11	3
10	National Center for Child Health and Development (Japan)	9	131	14.56	16

Take home message

- 川崎症: 兒童心臟殺手
- 治療: IVIG + aspirin
- IVIG: 廠牌有差異，但是沒得選擇！
- IVIG: 國血國用好處多
- Aspirin: 高低劑量不同，作用機轉不同
- Aspirin: WHO用於兒童退燒，只有川崎症
- 川崎症中心：高雄長庚醫院





孩子發燒心慌慌，KAWASAKI 診斷難
 上山下海都宣傳、團隊齊心保衛戰、
 守護心臟保健康



川崎症中心及兒童病科各專業護理師與社區媽媽各界送來的愛心玩具。(照片提供/前庭院高雄博真)

2024
 因川崎氏症
 泳渡日月潭
 為愛而泳

Sun Moon Lake

川崎症國際權威-高雄長庚兒童過敏氣喘風濕科醫師郭和昌，以年長專業照顧孩子會、先濟會、華人EMMA聯合會一等公益社團、在高雄、屏東、屏東之樂博國小進行川崎氏之樂教課程及兒童心臟訓練、心臟病預防等平日安全校園巡迴講座並為湖濱學生進行急救與心肺復甦訓練、1小時精心電腦、全校學生並派發宣傳品、資料與贈送自製贈品、幫助提出問題的兒童、並提供傷殘醫療支援協助、目前已完成40場次、訪活動、贈送講座4399人、心臟訓練957人、發現心臟異常126人、協助就醫39人、發放宣傳品722人、完成外科手術矯正的孩子又回復到許多不足與遺憾遺憾之路、也為學校創下了一點又一顆不滅的珍珠、川崎氏心醫者們也藉此阻止了下一代川崎氏病發的悲劇、本屆中華川崎症關懷協會主辦、號召多家愛心企業協助、響應泳渡日月潭為川崎氏防治關懷中心、希望大眾發覺問題、多多了解、

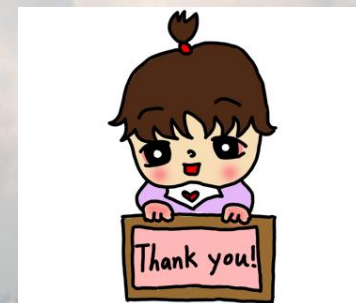
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主辦單位
 中華川崎症關懷協會
 郭和昌 醫師

協辦單位
 恩德婦產科 / 太田水素 / 曹洋綉儀 /
 孫秀輝 / 蘇維建設 / 羅鏡成岳 /
 第十三總醫院 / 老四川巴蜀麻辣燙 /
 屏東大同動物醫院



Thanks a lot!
感謝! 感谢!



川崎症門診
Kawasaki Disease Clinic

