

**Cochrane** Database of Systematic Reviews

# Intravenous immunoglobulin for the treatment of Kawasaki disease in children (Review)

Oates-Whitehead RM, Baumer JH, Haines L, Love S, Maconochie IK, Gupta A, Roman K, Dua JS, Flynn I

Oates-Whitehead RM, Baumer JH, Haines L, Love S, Maconochie IK, Gupta A, Roman K, Dua JS, Flynn I. Intravenous immunoglobulin for the treatment of Kawasaki disease in children. *Cochrane Database of Systematic Reviews* 2003, Issue 4. Art. No.: CD004000. DOI: 10.1002/14651858.CD004000.

www.cochranelibrary.com

Intravenous immunoglobulin for the treatment of Kawasaki disease in children (Review) Copyright © 2003 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.



# Intravenous immunoglobulin for the treatment of Kawasaki disease in children

Richmal M Oates-Whitehead<sup>1</sup>, J Harry Baumer<sup>2</sup>, Linda Haines<sup>3</sup>, Samantha Love<sup>4</sup>, Ian K Maconochie<sup>5</sup>, Amit Gupta<sup>6</sup>, Kevin Roman<sup>7</sup>, Jaspal S Dua<sup>8</sup>, Ichiko Flynn<sup>9</sup>

<sup>1</sup>(Deceased) BMA House, London, UK. <sup>2</sup>c/o Cochrane Acute Respiratory Infections Group, Bond University, Gold Coast, Australia. <sup>3</sup>Research Division, Royal College of Paediatrics and Child Health, London, UK. <sup>4</sup>BMJ Publishing, London, UK. <sup>5</sup>Department of Paediatrics A&E, St Mary's Hospital, London, UK. <sup>6</sup>Department of Paediatrics, Institute of Child Health, London, UK. <sup>7</sup>Paediatric Cardiology, The Hospital for Sick Children, Toronto, Canada. <sup>8</sup>Department of Paediatric Cardiology, Bristol Royal Hospital for Children, Bristol, UK. <sup>9</sup>London, UK

Contact: J Harry Baumer, harry@luson.plus.com.

Editorial group: Cochrane Vascular Group. Publication status and date: Stable (no update expected for reasons given in 'What's new'), published in Issue 12, 2021.

**Citation:** Oates-Whitehead RM, Baumer JH, Haines L, Love S, Maconochie IK, Gupta A, Roman K, Dua JS, Flynn I. Intravenous immunoglobulin for the treatment of Kawasaki disease in children. *Cochrane Database of Systematic Reviews* 2003, Issue 4. Art. No.: CD004000. DOI: 10.1002/14651858.CD004000.

Copyright © 2003 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

**Editorial note:** This review has been superseded by Cochrane Review 'Intravenous immunoglobulin for the treatment of Kawasaki disease': https://doi.org/10.1002/14651858.CD014884

# ABSTRACT

### Background

Kawasaki disease is the most common cause of acquired heart disease in children in developed countries. The coronary arteries supplying the heart can be damaged in Kawasaki disease. The principal advantage of timely diagnosis is the potential to prevent this complication with early treatment. Intravenous immunoglobulin (IVIG) is widely used for this purpose.

### Objectives

The objective of this review was to evaluate the effectiveness of IVIG in treating, and preventing cardiac consequences, of Kawasaki disease in children.

#### Search methods

Electronic searches of the Cochrane Peripheral Vascular Disease Group Specialised Register, CENTRAL, MEDLINE, EMBASE, and CINAHL were performed (last searched March 2003). We also searched references from relevant articles and contacted authors where necessary. In addition we contacted experts in the field for unpublished works.

### Selection criteria

Randomised controlled trials of intravenous immunoglobulin to treat Kawasaki disease were eligible for inclusion.

### Data collection and analysis

Fifty-nine trials were identified in the initial search. On careful inspection only sixteen of these met all the inclusion criteria. Trials were data extracted and assessed for quality by at least two reviewers. Data were combined for meta-analysis using relative risk ratios for dichotomous data or weighted mean difference for continuous data. A random effects statistical model was used.



#### **Main results**

The meta-analysis of IVIG versus placebo, including all children, showed a significant decrease in new coronary artery abnormalities (CAAs) in favour of IVIG, at thirty days RR (95% CI) = 0.74 (0.61 to 0.90). No statistically significant difference was found thereafter. A subgroup analysis excluding children with CAAs at enrolment also found a significant reduction of new CAAs in children receiving IVIG RR (95%) = 0.67 (0.46 to 1.00). There was a trend towards benefit from IVIG at sixty days (p=0.06).

Results of dose comparisons showed a decrease in the number of new CAAs with increased dose. The meta-analysis of 400 mg/kg/day for five days versus 2 gm/kg in a single dose showed statistically significant reduction in CAAs at thirty days RR (95%) = 4.47 (1.55 to 12.86). This comparison also showed a significant reduction in duration of fever with the higher dose.

There was no statistically significant difference noted between different preparations of IVIG.

There was no statistically significant difference of adverse effects in any group.

#### Authors' conclusions

Children fulfilling the diagnostic criteria for Kawasaki disease should be treated with IVIG (2 gm/kg single dose) within 10 days of onset of symptoms.

## PLAIN LANGUAGE SUMMARY

### Intravenous immunoglobulin for the treatment of Kawasaki disease in children

Good evidence that intravenous immunoglobulin treatment within the first 10 days of symptoms reduces coronary artery abnormalities (heart damage) in children with Kawasaki disease. Kawasaki disease is a disease that primarily affects children under five years old. The cause of Kawasaki disease is not known. Its symptoms are persistent fever, red eyes and lips, strawberry tongue, rash and swollen lymph nodes. If not detected and treated immediately, Kawasaki disease can result in heart damage and occasionally death. Intravenous immunoglobulin involves injecting antibodies purified from donated blood. The review of trials found that intravenous immunoglobulin given within the first 10 days of the disease reduces the risk of damage to the coronary arteries of the heart in children, without serious adverse effects.