Kawasaki Disease: The Role of Steroids

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ABSTRACT

Researchers from multiple institutions conducted a systematic review and meta-analysis to evaluate the effect of corticosteroid treatment in Kawasaki disease (KD). The researchers retrieved studies from Medline, the Cochrane Library, and Clinicaltrials.gov through 2015 that met the following criteria: (1) children diagnosed as having KD were included, (2) adjunctive corticosteroids either as initial or rescue therapy were tested, (3) comparisons between corticosteroids as initial adjunctive therapy (corticosteroids + IVIG) and conventional therapy (IVIG alone) were made, and (4) the incidence of coronary artery aneurysm (CAA) was measured in both groups. Subgroup meta-analysis, limited to studies in which patients classified as being at high risk for resistance to IVIG, was also conducted.

Of 681 articles retrieved, 16 studies involving 2,746 cases were included. Ten studies compared corticosteroids + IVIG as initial therapy compared to IVIG alone, and 6 studies evaluated corticosteroids as a rescue treatment after failure of initial IVIG therapy. There were significantly decreased odds of CAA (odds ratio [OR]: 0.3; 95% confidence interval [CI], 0.18, 0.56) with the use of corticosteroids + IVIG as initial therapy (vs IVIG alone) but no significant difference in CAA when using corticosteroids as a rescue treatment after failure of IVIG (OR, 0.8; 95% CI, .47, 1.56). In the subgroup analysis, patients predicted to be high risk for IVIG resistance had significantly decreased odds of CAA (OR, 0.24; 95% CI, 0.12, 0.46) when treated with adjunctive corticosteroids.

The researchers conclude that corticosteroids combined with IVIG as initial therapy for children with KD have a more protective effect against CAA than IVIG therapy alone. The added beneficial effects of corticosteroids are most pronounced in children at high risk for IVIG resistance.

COMMENTARY

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Dr. Spar has disclosed no financial relationship relevant to this commentary. This commentary does not contain a discussion of an unapproved/investigative use of a commercial product/device.

KD, a systemic vasculitis of unknown etiology, has an overall annual incidence of 20 per 100,000 children <5 years of age in the United States.[1,2] KD is typically self-limited, with fever and acute inflammation lasting just under 2 weeks with clinical characteristics including fever and mucocutaneous involvement.[3]

Cardiac involvement is a major clinical consequence of KD, which can lead to coronary artery dilation as well as myocardial abnormalities, such as decreased cardiac function, valvar regurgitation, and pericardial effusion. CAA, the most serious complication of KD, can occur in 20% of untreated children, and can lead to thrombosis, progressive stenosis, and ultimately ischemic heart disease. Risk factors for CAAs include late diagnosis and delayed treatment with IVIG, failure to respond to IVIG, <1 or >9 years of age, male sex, and prolonged fever >14 days.

Recommended initial therapy for KD is IVIG and aspirin. IVIG is most effective when started within the first 7–10 days of illness, with significant reduction in rates of CAA. Additional therapies have been used in an attempt to improve outcomes of KD. Corticosteroids have been used as adjuvant or salvage therapy with varying results. Koboyashi et al demonstrated that adding prednisolone to the standard regiment of IVIG improved coronary artery outcomes in Japanese patients with severe KD (4 vs. 23%) (*AAP Grand Rounds,* September 2012;28[3]:30).[4] These benefits were not seen in a large study performed by the Pediatric Heart Network,[5,6] though the methodology varied amongst the studies. The 3 published risk scores for KD were evaluated by Sleeper et al, but had low sensitivity and high specificity in a North American population.[7]

The results of the current study (a meta-analysis of >2,700 children and 16 studies) demonstrated that the duration of illness was shorter, and rate of coronary artery abnormalities were lower, when corticosteroids were administered adjunctively with IVIG. Patients predicted to be at high risk of IVIG resistance obtained the greatest benefit of adjuvant corticosteroid therapy regarding coronary artery abnormalities without increases in adverse events.

Bottom Line: High-risk children with KD may benefit from initial use of adjuvant corticosteroid therapy.

References

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