

P-320

Preventing coronary artery aneurysms after Kawasaki disease: Who to target for intensified primary therapy? A systematic review and meta-analysis of risk factors

Fu C.(1), Gill P.(2), McCrindle B.W.(2)

National Taiwan University Hospital Hsinchu Branch, Hsinchu, Taiwan (1);

SickKids, The Hospital for Sick Children, Toronto, Canada (2)

Introduction

Coronary artery aneurysms (CAAs) after Kawasaki disease (KD) are the leading cause of acquired heart disease in children. Despite prompt treatment with intravenous immunoglobulin (IVIG) plus aspirin (ASA), CAAs still develop in about 5% of patients. Taking into account cost-effectiveness and adverse effects, targeting patients at high risk for CAAs for intensified primary therapy should be considered. Risk factors have been variously reported; hence, we performed a systematic review to inform this strategy.

Methods

We performed a pre-specified search in PubMed spanning 2000-2018, and included studies of children diagnosed with KD and treated with standard IVIG and ASA. We assessed the study designs, quality and heterogeneity, and extracted the risk factors for CAAs as reported as odds ratios (OR) and 95% confidence intervals (CI), where available. We focused on demographic and clinical variables commonly available in clinical practice.

Results

The review included 101 papers. They consist of randomized control trials, prospective and retrospective cohort studies, and case-control studies. A random effects model was used in combination with effect size accounting for heterogeneity regarding study design and parameter definition. Preliminary meta-analysis showed commonly reported risk factors to include age less than 12 months (OR 2.28, 95% CI 1.59 – 3.25), delayed IVIG treatment (OR 3.82, 95% CI 2.38 – 6.13), IVIG resistance (OR 4.42, 95% CI 3.03-6.44), male gender (OR 1.57, 95% CI 1.46 – 1.69), and incomplete KD (OR 4.22, 95% CI 1.09 – 16.26). Higher C-reactive protein (CRP), erythrocyte sediment rate (ESR), platelet and leukocyte count, and low albumin were commonly reported risk factors, with varying cut-off values for prediction of CAAs. We also identified a number of genetic and biomarker studies that reported novel risk factors.

Conclusion

Young age, male sex, incomplete KD, delayed IVIG treatment and IVIG resistance are important risk factors for CAAs after KD, with additional laboratory variables noted. Strategies to identify and target these patients for more intensified primary therapy may further decrease the risk of CAAs. Current strategies targeting IVIG resistance only may be inadequate. Clinical application of novel risk factors may further improve prediction and prevention.