

Cohort study

Association between COVID-19 and Kawasaki-like disease in children is a topic that needs further investigation

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Implications for practice and research

- ▶ Recent reports of incremental trends of Kawasaki (KD) disease among children in COVID-19 epidemic areas is a significant issue that cannot be simply ignored.
- ▶ KD has a strict diagnostic criterion, so the attribution of a set of inflammatory symptoms in children with COVID-19 to KD requires more careful interpretation.

Context

The cause of Kawasaki disease (KD) as an acute febrile illness of childhood is not fully understood. Although certain epidemiologic and clinical features support an infectious origin, no single infectious aetiological agent has been successfully identified.¹ KD has a wide range of clinical and laboratory features, so can be categorised as classic, incomplete (atypical) and ambiguous forms.^{1,2} Approximately 20–25% of untreated children develop coronary artery abnormalities including aneurysms.¹

Methods

Verdoni and his colleagues conducted an observational cohort study and retrospectively reviewed the hospital medical records of patients diagnosed with KD admitted to a tertiary paediatric referral centre (Bergamo, Italy), between 1 January 2015 and 20 April 2020.³ They divided the patients into two groups: group 1, including 19 patients presenting during the 5 years preceding the local COVID-19 epidemic; and group 2, including 10 patients presenting thereafter. Patients with KD presentations including both the classic and incomplete types were defined according to the criteria of the American Heart Association.² Furthermore, KD shock syndrome (KDSS) and macrophage activation syndrome (MAS) were investigated and compared among cases of two groups according to the Paediatric Rheumatology International Trials Organisation criteria.⁴

Findings

The results of this study showed that the two groups differed in disease incidence (a 30-fold increase of Kawasaki-like disease among group 2), mean

age (group 2 patients were older than group 1), cardiac involvement (mostly among group 2), the higher frequency of KDSS and MAS and need for adjunctive steroid treatment among group 2 children. This study concluded that the COVID-19 epidemic was associated with high incidence of a severe form of KD among studied population and predicted that a similar outbreak will occur in other countries involved in COVID-19 epidemic.

Commentary

Although a synthetic study had shown that COVID-19 was low in severity or even asymptomatic in children and adolescents,⁵ the Verdoni cohort study revealed the surge of Kawasaki-like disease among affected children.³ Whether signs such as haemodynamic shock or findings such as myocarditis are caused directly by the coronavirus or are due to a second disease such as KD is not something that can be easily interpreted. The average age of children in the second group of patients in this study somewhat weakens the diagnosis of KD, especially since incomplete KD is commonly seen in early infancy. Also in half of the patients in the second group, KD diagnosis is incomplete, while such a diagnosis is based on expert opinion in valid KD diagnostic algorithms,² it does not have high power in the pyramid of level of evidence. Furthermore an accurate description of coronary artery disease in KD is essential, however, in the present study it is not addressed properly. Finally in an editorial in the *New England Journal of Medicine*, Levin referred to a complication of COVID-19 called multisystem inflammatory syndrome in children (MIS-C).⁶ According to the Levin's viewpoint, it may be better to use a non-specific entity such as MIS-C instead of placing a set of clinical and laboratory findings in children with COVID-19 in the profile of a specific diagnosis such as KD.

Competing interests None declared.

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