Response to: 'Correspondence on 'Paediatric multisystem inflammatory syndrome temporally associated with SARS-CoV-2 mimicking Kawasaki disease (Kawa-COVID-19): a multicentre cohort' by Pouletty *et al*' by Pino *et al*

In their correspondence, Pino *et al*[1] reported a cohort of 12 children with Kawasaki disease (KD) during the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) epidemic in Barcelona, Spain. Among them, six had a positive SARS-CoV-2 infection confirmed by RT-PCR or serology while six had not. Interestingly, in line with our findings[2] and reports from other settings,[3–7] patients with multisystem inflammatory syndrome temporally associated with SARS-CoV-2 infection mimicking KD (Kawa-COVID-19) exhibited several differences as compared with classical KD, such as older age, higher inflammatory parameters, more frequent cytopenia and cardiac involvement, including myocarditis, often requiring haemodynamic support.[1 2] These important discrepancies led to consider Kawasaki syndrome associated with SARS-CoV-2 infection as a distinct entity (Kawa-COVID-19,[2] or multisystem inflammatory syndrome in children (MIS-C) associated with COVID-19,[8] or or paediatric inflammatory multisystem syndrom temporally associated with SARS-CoV-2 (PIMS-TS[9]). However, the possibility of a common pathway shared with classic KD has led to administer similar therapeutics to KD, including intravenous immunoglobulins (IVIG) and corticosteroids.[3–7] If a substantial proportion of children were resistant to the first dose of IVIG, the large majority had a favourable short-term evolution with a second dose of IVIG±corticosteroids, as described by Pino *et al* and in our cohort.[1 2]

The prognosis of KD is graved by its cardiac involvement,[10] especially with coronary aneurysms, which are specific of KD and could occur several weeks after onset of disease. Therefore, a close surveillance is recommended during the months following KD diagnosis.[10] Although only dilatations without aneurysms have been described at diagnosis by Pino *et al* and in our study, such complications have been described elsewhere in Kawa-COVID-19.[3 11] This coronary involvement may be more frequent in patients with first-line IVIG resistance,[10 12] raising concerns on the evolution of children with Kawa-COVID-19. To date, the middle-term evolution of these patients is unknown.

In table 1, we described the clinical, biological and cardiac evolution of eight children, who developed a Kawa-COVID-19 in our tertiary hospital located in Paris, France. SARS-CoV-2 infection was confirmed in all of them either by nasopharyngeal SARS-CoV-2 RT-PCR or by SARS-CoV-2 serology (table 1). They had initial severe presentation with six myocarditis and required haemodynamic support in five cases. One month after the diagnosis, clinical and biological assessments were normal in all cases, without any persistent inflammatory syndrome, and all had normal cardiac ultrasounds (table 1).

These preliminary findings need to be confirmed with larger multicentre cohorts and a more prolonged follow-up, but suggest that despite an initial severe presentation with potentially life threatening cardiac involvement, the middle-term evolution of this specific entity may be reassuring. Finally, one of the main challenges of Kawa-COVID-19 may be the need for a long-term follow-up and cardiac assessment to better evaluate incidence and risk factors of coronary involvement and/or other cardiac dysfunctions and maybe deciphering physiological pathways responsible for this specific organ failure.

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Table 1 Evolution of children with Kawa-COVID-19 1 month after disease onset in one Great Paris Region tertiary centre, n=8

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6	Patient 7	Patient 8
Age (years)	15	12	11	11	13	6	14	10
Sex	Male	Female	Male	Female	Female	Male	Female	Female
Type of Kawasaki disease	Incomplete	Incomplete	Complete	Complete	Complete	Incomplete	Complete	Incomplete
SARS-CoV-2 nasopharyngeal RT-PCR	Negative	Positive	Positive	Positive	Positive	Negative	Positive	Negative
SARS-CoV-2 serology	IgG+	IgG+	IgG+	Negative	IgG+	IgG+	IgG+	IgG+
Cardiac involvement	Myocarditis and coronary dilatation (Z score=4)	None	None	Myocarditis	Myocarditis and coronary dilatation (Z score=4)	Myocarditis	Myocarditis	Myocarditis
Haemodynamic support	Yes	No	No	No	Yes	Yes	Yes	Yes
Ferritinaemia at diagnosis (microG/L)	1221	2500	768	118	1208	222	207	917
Maximal CRP level (mg/L)	309	258	179	119	352	369	316	444
Treatments	IVIG +mPDN	IVIG +mPDN	No	IVIG	IVIG +tocilizumab	IVIG +mPDN	IVIG	IVIG +mPDN
Evolution after 1 month								
Clinical assessment	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
CRP level (mg/L)	<10	<10	<10	<10	<10	<10	<10	<10
Cardiac ultrasound	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

CRP, C-reactive protein; IVIG, intravenous immunoglobulins; mPDN, methylprednisolone; RT-PCR, real-time PCR; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

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