HIGH PD1 EXPRESSION ON CD4 AND CD8 T CELLS ON KAWASAKI COVID-19 POSITIVE CHILDREN AFTER RECOVERY

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BACKGROUND

COVID-19, the disease caused by the SARS-CoV-2, was initially observed with severe clinical manifestations mainly in individuals over 60 years of age and in those with comorbidities. Subsequently, children were diagnosed with SARS-CoV-2 infection and some of them have developed Kawasaki disease in a postinfectious phase. The objective of this study was to investigate the immunological aspects of patients with Kawasaki disease with or without COVID-19 infection.

METHODS

This is a prospective, multicenter observational study in partnership with five Brazilian pediatric rheumatology services. Thirteen children and adolescents diagnosed with complete or incomplete Kawasaki disease were evaluated in the presence or absence of SARS-CoV-2 infection. An 8 mL blood sample was collected into EDTA vial before starting intravenous immunoglobulin (IVIg) treatment. After 14 to 21 days of the first blood collection, a new blood sample collection was performed. The immunophenotyping of T and B cell was performed by flow cytometry.

RESULTS

The characteristics of patients, clinical, laboratory and immunological data are described in Table 1.

CONCLUSION

COVID-19 positive children who develop Kawasaki disease show higher PD1 expression on CD4 T cells and CD8 T cells post IVIG than in those without evidence of COVID-19 infection, suggestive of immune exhaustion.

KEYWORDS

COVID-19, Kawasaki disease, PD1, CD4, CD8.

Table 1. Patients with and without COVID-19 analysis.

PARAMETER	COVID-19(+) (n = 5)	COVID-19(-) (n = 8)	p-value
Median age (years)	6	1	
Male gender (%)	4 (80)	5 (62.5)	
Complete Kawasaki (%)	3 (60)	4 (50)	
Total lymphocytes pre-IVIg (median)	890.0	3347.0	0.01
Total neutrophils pre-IVIg (median)	6072.0	10459.5	0.11
Platelets pre-IVIg (median)	165000.0	497500.0	0.06
Lymphocytes pre-IVIg (median, %)	39.1	29.4	0.61
Lymphocytes post-IVIg (median, %)	31.6	19.9	0.04
Pd1 on cd4 t cell pre-IVIg (median, %)	9.2	10.2	0.66
Pd1 on cd4 t cell post-IVIg (median, %)	12.4	4.8	0.02
Pd1 on cd8 t cell pre-IVIg (median, %)	17.1	11.0	0.77
Pd1 on cd8 t cell post-IVIg (median, %)	19.8	6.7	0.02
Cd19 cell pre-IVIg (median, %)	15.4	22.6	0.38
Cd19 post-IVIg (median, %)	15.6	15.7	0.88
Plasmablasts pre-IVIg (median, %)	1.7	1.0	0.34
Plasmablasts post-IVIg (median, %)	3.1	0.3	0.02

IVIg: intravenous immunoglobulin.