

Neutropenia in children with COVID-19

Introduction:

During the COVID 19 pandemic most children were asymptotically affected. They mostly got to our knowledge after developing symptoms that were defined as pediatric multisystemic inflammatory syndrome (PIMS) or multisystem inflammatory syndrome in children (MIS-C). Other children were admitted with hematological abnormalities related or not to the PIMS. Other than the regular symptoms and complications. Hematological abnormalities were described including anemia thrombocytopenia Lymphopenia and Lymphocytosis.
AIM: to Investigate whether neutropenia in children after Covid-19 infection is immune mediated

Patients and Methods:

Blood samples were collected from five out of eight patients from Ziv hospital pediatric department and pediatric hematology clinic. Age from 5 months-17years old. 3/5 suffer from PIMS. One patient referred because of neutropenia 6 weeks after a confirmed diagnosis of covid19.

One has developed neutropenia during hospitalization as a result of COVID-19 infection.

Neutrophils autoantibodies were tested at the platelet and neutrophil immunology laboratory in Rambam Medical center using GIFT (Granulocyte immunofluorescent test) and GAT (granulocyte Agglutination test) and MAIGA (monoclonal antibody-immobilized granulocyte antigen assay).

Results:

All 5 patients were diagnosed with neutropenia (<XXX). Two with sever neutropenia (<XXX), and 3 with mild neutropenia. One patient with sever neutropenia was diagnosed during his COVID19 disease and four were diagnosed few weeks after. Two patients also suffered from anemia and thrombocytopenia.

5/5 patients were found positive for anti-neutrophil antibodies

Discussion:

For our knowledge this is the first report on autoimmune neutropenia in children as a result of COVID-19 infection. We believe that the clinical course is benign since no patient had serious bacterial infection during the neutropenic course.

No	Patient name	ID	Age	Clinical manifestation	CBC	GIFT	GAT
1	Ben Shlomo Tamar	32507569-5	15(COVID-FEW WEEKS AFTER	חני ספירת דם	4/4	HNA3 neg
2	Blayish Ayala	22892601-0	1.3(2/21)	COVID CROUP		1/4	HNA1+,HNA3 neg
3	Avarjil hagai yanon	32809187-1	14(4/21)	PIMS		4/4	HNA3 neg
4	Heib Mohamad	21404771-4	17(3/21)	PIMS		4/4	HNA3 neg
5	Cohen Yedidia	32564807-9	16(5/21)	ITP		1/4	HNA3 neg
6	Shlizenger Tahil Myriam	21891293-9		ITP			
7	Zohar Girshon	32771239-4		Corona ab-pos			
8	Omar Ahmad			PIMS			

Table (1)

Patient	Time of diagnosis from cov19	Clinical manifestation	Laboratory manifestation	Time to resolution
Patient 1		PIMS	Sever neutropenia	
Patient 2		PIMS	Sever neutropenia	
Patient 3		PIMS	Sever neutropenia	
Patient 4		CROUP	Sever neutropenia	
Patient 5		ITP	Sever Thrombocytopenia	
Patient 6		ITP	Sever Thrombocytopenia	
Patient 7		Neutropenia	Sever neutropenia	