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Vasculitis (Henoch-Schonlein Purpura) and COVID-19: Another Complication for a Big Kid

Oulfa. Asbik[1], Aziza. Elouali[2], A. El Khalifi[3], Maria. Rkain[4], Abdeladim. Babakhouya[5]

Center Hospital University Mohammed VI Oujda, Department of Pediatrics
Faculty of Medicine and Pharmacy of Oujda, Mohamed First University Oujda, Oujdamorocco

Abstract: ***As much as the SARS-Cov-2 infection was mainly focused on because of its great effects on the respiratory tract, it has shown to impact the whole inflammatory system, causing different presentations that invade the skin, the gastrointestinal tract, the heart, in addition to other symptomatologies. These new manifestations that are exposing different organ dysfunctions; which are related to a previous exposure to COVID19, can be described as aspects of pediatric inflammatory multisystem syndrome (PIMS). PIMS is most likely a delayed dysregulated immune response to SARS-CoV 2, due to the cytokine storm, causing a hyperinflammatory response. And one of its discussed manifestations is HENOCH-SCHONLEIN purpura (HSP), an immune mediated vasculitis associated with IgA deposition, that mostly affects children.***

Keywords: PIMS, COVID-19, HENOCH-SCHONLEIN PURPURA

1. Introduction

HENOCH-SCHONLEN purpura (HSP) is the most frequent vasculitis among children. It is described as an inflammatory cascade that is IgA-mediated, invading the vascular endothelium. It has a multi-organ involvement including skin, kidneys, and the gastrointestinal tract. HSP usually occurs following upper respiratory tract infections in addition to other causes such as vaccinations, medications, malignancies and insect bites. It manifests clinically as a trilogy of palpable purpura, abdominal pain, and arthritis. (1)

COVID-19 is caused by the novel coronavirus SARS-CoV-2, which is a single stranded RNA virus. The clinical presentation ranges from being asymptomatic to reaching a critical state that can lead to acute hypoxia respiratory failure or mortality. Although pulmonary symptoms are the most common such as cough, dyspnea, fever and sore throat, the virus can take over other organ systems as well. (2)

However, data related to extra pulmonary manifestations are still needed for a closer insight. Therefore, we report a pediatric patient with Henoch-Schonlein purpura (HSP) secondary to a COVID-19 infection.

2. Case Presentation

We present a case of a 14-year – old Moroccan patient, who completed his vaccinations according to national vaccination program, with no significant prenatal, natal and postnatal reported history, a normal motor and mental development, whose parents were tested positive for COVID-19 a month earlier.

Six days before admission, it started as a fleeting and migratory arthralgia, regarding the left ankle in the first place, coupled with inflammatory signs such as swelling, pain and redness, without limitation in movement. The patient presented the same symptomatology in the right ankle two days later.

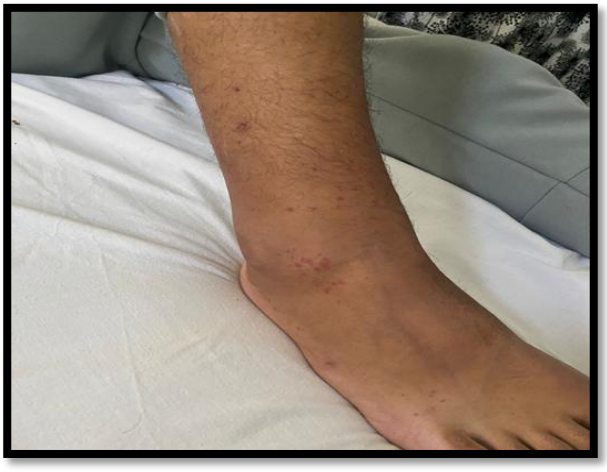
The evolution was marked by intermittent abdominal pain associated with an inflammatory invasion of other articulations such as both elbows and the right wrist.

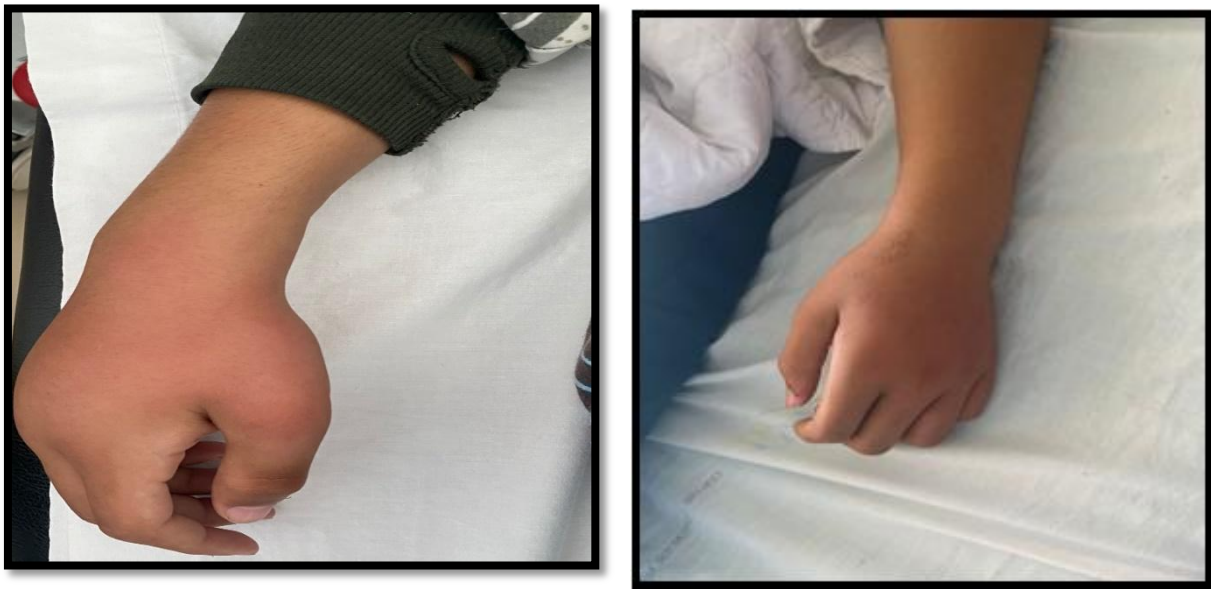
A day before his admission, the patient developed purpuric spots involving both lower limbs and ears in a form of purplish red punctate lesions.

On admission, temperature was 39°c and all other vitals were normal (normocardic at 98 beats per minute, eupneic at 22 breaths a minute). Physical examination showed intact mental status, normal S1 and S2 with no added sounds, good bilateral entry and clear lung sounds, soft abdomen with a mild abdominal tenderness. Mucocutaneous exam revealed orthostatic infiltrated purpura which predominates in the lower extremities, that is mainly triggered by physical activity.

The dipstick test showed positive proteinuria with no hematuria.

Laboratory testing revealed:





Picture 1: images of the child showing inflammatory signes and purpura

Table: Laboratory testing revealed

Labortatory tests	In admission	Hospitalization		
		Day 3	Day 6	Day 11
Blood count				
Leucocytes/ul	25680	24900	30540	25500
Granulocytes /ul	22030	20640	27780	22230
Lymphocytes /ul	2530	2100	1640	1750
Eosinophils/ul	30	310	40	20
Monocytes /ul	1030	1760	1020	1440
Hemoglobin (g/dL)	15g/dl	12.9	11	11.4
Hematocrit (%)	44.5	37.6	32.5	33.6
Platelets/ul	684000	529000	619000	642000
Biochemical profile				
Urea (mg/dL)	0.23	0.18	0.23	0.29
Creatinine (mg/dL)	6.13	6.27	4.43	4.21
CRP mg/l	**117.98**	**220**	**184**	**14.2**
Total proteins (g/dL)	78	53		
Albumin (g/dL)	43	25	25	27
Proteinuria in 24 hours (mg/dL)	1431.96	-	-	231.46
GlobularSedimentation Rate (mm/h)	19	57	53	-
Coagulation profile				
Prothrombin time (seg)	66%			
Activated partial thromboplastin time (seg)	25.00			
INR	1.26			
Ig A g/l	2.75			
C3 g/l	1.67			
C4 g/l	0.10			
BNP pg/ml	10			
Crops				
Blood culture	-			
Urine culture	-			
COVID-19 rapid test				
SARS-CoV-2 IgM	-			
SARS-CoV-2 IgG	+			

The patient was prescribed a painkiller at first, but with the persistence of fever and aggravation of the biological results (with a CRP of 220 and a sedimentation rate of 57, in addition to a positive dipstick test), the patient was given ASPEGIC in an anti-inflammatory dose. Laboratory tests were performed, among which stood out: IgG positivity for the COVID-19 Test.

During his stay at the hospital, he presented abdominal pain and rectorrhagia. An abdominal ultrasound was performed to rule out acute surgical abdomen, the result of which was an intussusception, and an increase in the thickness of the intestinal wall. Surgery was unnecessary as long as we had intestinal obstruction.

Treatment:
The decision was to start corticotherapy and treat our case as a paediatric inflammatory multisystem syndrome.

The patient received 5 days of corticotherapy with a dose of 2.5 mg/kg plus 7 days of aspegic in an anti-inflammatory dose.

The evolution was marked with the clinical and biological improvement (a diminution of CRP and regression of pre-existing oedemas of the right elbow and wrist, we also achieved a negative dipstick test with no proteinuria.

3. Discussion

A Taiwanese study observing the epidemiological characteristics of HSP among children concluded that it is commonly found in children whose age is younger than 7 years with a peak incidence at the age of 6 years old . A decreased rate after 10 years old was noticed in males, opposed to a higher percentage in females between 10 and 17 years old. (3)

SARS-CoV-2 infection was observed to have a major impact on vascular bed, since it facilitates the induction of endotheliitis in several organs as a direct consequence of viral involvement, in addition to the host's inflammatory response. (4)

The cytokine storm COVID creates is the presentation of the immunological expansion: from type 2 T-helper response to type 3 hypersensitivity with the release of immune complexes which invade the vascular walls, resulting in a severe inflammatory reaction. (5) (6)

The diagnosis of HSP is clinical as it appears in a form of abdominal pain, arthralgia, renal involvement and rash. But the elevation of CRP (C-reactive protein) isn't usually observed in general cases of this pathology, hence we wanted to point a finger to the positive result we obtained considering our case, which can be originally related to COVID19.

The outcome of our treatment that involved corticotherapy was the obstention of normal biological test results with the resolution of symptoms and signs. Other studies, also recommend the good out-turn of this method, while using methyl prednisolone because of the risk of resistance to intravenous immunoglobulin treatment. (7)

4. Conclusion

COVID19 is an infectious disease that causes a great damage in our endothelial cells while creating an inflammatory response. This pathological sequence that is IgA mediated is discussed to be playing a role in revealing HSP, a vasculitis that is well observed among children.

Hence, we present this case of a pediatric patient with a recent history of COVID19 that presented HSP, to help figure out the link between these two pathologies.

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