

## LETTERS

## SARS-CoV-2 infection in ambulatory and hospitalised Spanish children

Limited paediatric data on COVID-19 suggest that it is less frequent and severe in children than in adults.<sup>1,2</sup> Spain is currently one of the most affected countries. Our aim was to describe the patients under the age

of 18 years diagnosed with SARS-CoV-2 infection at Hospital La Paz (Madrid) in the first month of the outbreak (11 March to 9 April 2020). Inclusion criteria were all children who underwent PCR for SARS-CoV-2 in nasopharyngeal smears.

Out of 349 children, 58 (16.6%) had a positive PCR for SARS-CoV-2 (table 1). All had compatible symptoms, except two cases in which the PCR was indicated prior to intensive care unit (ICU) admission or surgery. Twenty-five (43%) children were

followed up as outpatients. Nine of them (35%) attended a second time but none required hospital admission. Thirty-three (57%) children were admitted, after a median of 3 days of symptoms (IQR 2–5). Among inpatients, 14 (42.4%) received oxygen therapy for a median of 3 days (IQR 2–6.75), and 12 (36.4%) were given antibiotics (ceftriaxone 11/12). Three patients with severe disease received remdesivir, and tocilizumab was added in two with an inflammatory syndrome. Five children

**Table 1** Characteristics of 58 children with SARS-CoV-2 infection in Hospital La Paz, Madrid, Spain

	All cases (n=58)	Outpatients (n=25)	Inpatients (n=33)	P value*
Male sex	37 (63.8%)	15 (60%)	22 (66.7%)	0.801
Median age in months (IQR)	35.5 (3.3–146)	82 (6–151)	19.4 (1.4–117)	0.438
Symptomatic household contact	30 (51.7%)	18 (72%)	12 (36.4%)	<b>0.0153</b>
Underlying conditions	23 (39.7%)	10 (40%)	13 (39.4%)	0.963
Immunodeficiency (primary or secondary)	6 (26%)	3 (12%)	3 (9.1%)	
Respiratory disease	6 (26%)	1 (4%)	5 (15.2%)	
Cardiovascular disease	5 (21.7%)	1 (4%)	4 (12.1%)	
Solid organ transplant	2 (8.6%)	0	2 (6.1%)	
Nephropathy	2 (8.6%)	0	2 (6.1%)	
Neurological disease	1 (4.4%)	0	1 (3%)	
Vasculitis	1 (4.4%)	0	1 (3%)	
Signs and symptoms				
Temperature >37.9°C	41 (70.7%)	18 (72%)	23 (69.7%)	0.849
Cough	42 (72.4%)	18 (72%)	24 (72.7%)	0.951
Rhinorrhoea	33 (56.9%)	14 (56%)	19 (57.6%)	0.904
Sore throat	4 (6.9%)	2 (8%)	2 (6.1%)	0.773
Breathing difficulty	10 (17.2%)	2 (8%)	8 (24.2%)	0.105
Vomiting	9 (15.5%)	3 (12%)	6 (18.2%)	0.520
Diarrhoea	7 (12.1%)	5 (20%)	2 (6.1%)	0.107
Headache	8 (13.8%)	4 (16%)	4 (12.1%)	0.671
Myalgia	2 (3.4%)	2 (8%)	0	0.098
Rash	2 (3.4%)	0	2 (6.1%)	0.693
Loss of taste	1 (1.7%)	1 (4%)	0	0.246
Anosmia	1 (1.7%)	1 (4%)	0	0.246
SatO <sub>2</sub> <93%	14 (24.1%)	0	14 (42.4%)	<b>0.002</b>
Chest radiograph	40 (69%)	15 (60%)	25 (75.8%)	0.318
Normal	5 (12.5%)	2 (13.3%)	3 (12%)	0.671
Perihilar infiltrates	15 (37.5%)	6 (40%)	9 (36%)	
Ground glass interstitial pattern	10 (25%)	5 (33.3%)	5 (20%)	
Lobar consolidation	3 (7.5%)	1 (6.7%)	2 (8%)	
Multilobar consolidation	7 (17.5%)	1 (6.7%)	6 (24%)	
Blood tests†	43 (74.1%)	14 (56%)	29 (87.9%)	<b>0.0137</b>
Leucocytes/mm <sup>3</sup> (median (IQR))	9145 (5830–9145)	8010 (5562–10 745)	9145 (5935–12 107)	0.498
Lymphocytes/mm <sup>3</sup> (median (IQR))	2390 (970–3930)	2700 (2100–5110)	1945 (835–4140)	0.192
D-dimer, mg/dL (IQR)	903 (717–2143)	403 (260–867)	920 (710–2112)	0.912
Procalcitonin, ng/mL (IQR)	0.11 (0.06–0.16)	0.08 (0.03–0.17)	0.13 (0.09–0.16)	0.338
C reactive protein, mg/L (IQR)	7.4 (0.67–26.3)	7.4 (0.6–31)	7.5 (0.6–23)	0.853
Diagnosis				
Febrile syndrome	12 (20.7%)	3 (12%)	9 (27.3%)	<b>0.038</b>
Upper respiratory tract infection	22 (37.9%)	16 (64%)	6 (18.2%)	
Pneumonia	18 (31%)	5 (20%)	13 (39.4%)	
Other‡	6 (10.3%)	1 (4%)	5 (15.1%)	
Treatment				
Hydroxychloroquine	31 (53.4%)	11 (44%)	20 (60.6%)	0.322
Lopinavir/ritonavir	2	0	2 (6%)	–
Tocilizumab	2	0	2 (6%)	–
Remdesivir	3	0	3 (9%)	–

\*Comparison between outpatients and inpatients.

†In patients with more than one blood test result, values represent highest leucocytes, D-dimer, procalcitonin and C reactive protein and lowest lymphocytes.

‡Diabetic ketoacidosis, hypertensive emergency, appendicitis, 2 cases of febrile urinary tract infection (*Escherichia coli* and *Enterococcus faecalis*), recurrent wheezing.

were admitted to the PICU (15% of those hospitalised), three for severe COVID-19, one for hypertensive crisis and the other for diabetic ketoacidosis. A 5-month-old infant with dilated cardiomyopathy and Hurler's disease died. Median hospital stay was 3 days (IQR 2–5).

This is the largest series of children with COVID-19 in Spain to date. Most children had good outcomes, including five outpatients with pneumonia. On the other hand, the rates of hospital (57%) and ICU (15%) admission were high. These data must be interpreted carefully. In China, where hospitalisation of only 2%–3% of infected children has been described,<sup>2</sup> numerous asymptomatic or mildly symptomatic children, in the context of infections at home, were tested.<sup>3</sup> In Spain, during the study period diagnostic tests were only conducted in those children with compatible respiratory symptoms and criteria for hospitalisation or underlying chronic pathology.<sup>4</sup> Children with mild symptoms were not tested even if there was a confirmed case in the household. About 40% of children in our series had underlying medical conditions. These patients consulted promptly after symptom onset, and according to national recommendations, underwent viral testing even with mild symptoms. In our series, their outcome was similar to healthy children. Although the role of hydroxychloroquine in the treatment of COVID-19 remains to be clarified, we used it in a high percentage of patients following local recommendations,<sup>5</sup> without side effects.

Our study has several limitations, including its retrospective design. It is the experience of a single tertiary centre, and screening was carried out only in cases that required hospitalisation or had chronic diseases. Despite this, we consider it to be a reliable description of COVID-19 in children in Spain.

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