Table 2 Summary of diagnostic tests and treatments used in symptomatic patients in each wave.

	Symptomatic patients in 1st wave ($n = 73$)	Symptomatic patients in 2nd wave ($n = 150$)	*P*
[0.1-4] *Diagnostic tests*			
Blood panel	56 (76.7%)	30 (20%)	<.05
Chest X-ray	50 (68.5%)	10 (6.7%)	<.05
Chest CT scan	0	0	
[0.1-4]			
[0.1-4] *Treatment*			
Antibiotherapy	24 (32.9%)	2 (1.3%)	<.05
Steroids	4 (5.5%)	7 (4.7%)	=1
Hydroxychloroquine	33 (45.2%)	0	<.05
Lopinavir/ritonavir	2 (2.7%)	0	=1
Tocilizumab	2 (2.7%)	0	=1
Remdesivir	3 (3.5%)	0	=1
Oxygen therapy	14 (19.2%)	1 (0.7%)	< .05

of the pandemic led to underdiagnosis of infection by SARS CoV-2 in children, as diagnostic tests were only ordered in patients with underlying disease or requiring hospital admission. This is reflected in the characteristics of the patients given the diagnosis in each wave, with a higher proportion of patients with underlying disease, higher triage levels and a higher frequency of admission in the first wave.

In addition, the lack of knowledge of the disease at the outset of the pandemic led to a more aggressive approach in diagnostic testing, hospital admission, treatment and repeated emergency visits during the first wave.

Although schools remained open during the second wave, we found that in most cases, the known contacts were household members.

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Acute appendicitis in children with multisystemic inflammatory syndrome associated to SARS-CoV-2 (MIS-C). A complication to consider☆

Apendicitis aguda en niños con síndrome inflamatorio multisistémico pediátrico asociado a SARS-CoV-2 (SIM-PedS). Una complicación a considerar

To the editor:

In April 2020, a new systemic inflammatory syndrome was first described in the paediatric population with features that overlapped those of Kawasaki disease, toxic shock syndrome and macrophage activation syndrome.[1] An association with SARS-CoV-2 was rapidly established, as most affected patients tested positive for the virus and/or had clinical manifestations compatible with COVID-19 2–6 weeks prior to onset.

One of the most frequent features of the syndrome is the presence of gastrointestinal symptoms (abdominal pain, vomiting and diarrhoea), in some cases compatible with acute abdomen. This suggested the possibility of an association between the multisystemic inflammatory syndrome in children (MIS-C), SARS-CoV-2 infection and acute appendicitis.[2–4]

We present the cases of 3 children with an unremarkable prior history that developed acute appendicitis in the context of MIS-C. Table 1 summarises the clinical and laboratory characteristics of these cases.

Case 1. Boy aged 12 years that presented to the emergency department in May 2020 with a fever of 3 days' duration, abdominal pain, vomiting and diarrhoea associated with a transient, salmon-pink rash. The workup revealed marked elevation of acute phase reactants (APRs) and the SARS-CoV-2 polymerase chain reaction (PCR) test was negative. The initial ultrasound revealed terminal ileitis with a normal appendix and a small amount of free intraperitoneal fluid. The patient started antibiotic treatment, and the fever persisted. Systemic inflammatory syndrome in chil-

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Table 1 Clinical characteristics, laboratory values, imaging features and treatment of patients with MIS-C (criteria of the Centers of Disease Control and Prevention) and acute appendicitis.

Case	1	2	3
Age, years	12	2	2
Sex	Male	Male	Female
Diagnosis			
Date	May 2020	February 2021	February 2021
Days from positive SARS-CoV-2 test to onset of symptoms of MIS-C	Unknown, mother positive 21 days before. No PCR performed in child at time, PCR− at admission	PCR+ 26 days before	PCR+ 33 days before
Serology	Rapid total antibody +	IgM+ IgG+	IgM+ IgG+
Signs and symptoms			
Days from onset to diagnosis of MIS-C	6	3	3
Days from onset to diagnosis of acute appendicitis	8	6	3
Fever	+	+	+
Exanthema o rash	+	+	+
Conjunctival hyperaemia	+	+	+
Cracked lips and/or damage to oral mucosa	−	+	+
Cervical lymph node enlargement > 1.5 cm	−	−	−
Hand or foot involvement (oedema or desquamation)	−	−	−
Abdominal pain	+	+	+
Vomiting	+	−	−
Diarrhoea	+	+	−
Tachycardia	−	+	+
Hypotension	−	−	−
Shock	−	−	−
Laboratory and imaging findings			
CRP (mg/dL)	38.8	13.5	17.3
Procalcitonin (ng/mL)	10.4	8.2	0.2
Albumin (g/dL)	2.9	2.7	4
Ferritin (ng/mL)	221	213	210
AST (U/L)	19	48	23
ALT (U/L)	11	30	14
D-dimer (μg/mL)	5.3	4.2	3.9
BNP (pg/mL)	159	82	14
Troponin (pg/mL)	1	7	1
Leucocytes (10^3/mm^3)	14.82	12.94	18.11
Lymphocytes (10^3/mm^3)	0.75	1.69	2.09
Blood culture	Negative	Negative	Negative
Chest X-ray	Normal	Normal	Normal
Echocardiogram at admission	Normal	Normal	Normal
Abdominal ultrasound/	Ultrasound: moderate amount of free fluid with normal appendix and without visualization of tip. Terminal ileitis	Ultrasound: free fluid, mesenteric lymphadenitis and dilated caecal appendix with 7 mm diameter and loss of normal stratification at tip.	Ultrasound: phlegmon in right iliac fossa, possibly an appendiceal mass. CT: perforated appendicitis with abdominal abscesses
Echocardiogram at 6—8 weeks	Normal	Normal	Normal
Medical treatment			
IV steroid therapy (2 mg/kg/day 5 days)	−	+	−
IVIG (2 g/kg)	+	+	−
Acetylsalicylic acid (50 mg/kg/day)	−	+	−
IV antibiotherapy	+	+	+

Table 1 (*Continued*)

Case	1	2	3
Surgical approach	Percutaneous drainage of abscesses and delayed appendectomy.	Laparoscopic appendectomy	Laparoscopic appendectomy
Surgical findings	Loss of wall structure and granulomatous changes	Catarrhal appendicitis with fibrin at tip, free intraperitoneal fluid	Perforated appendicitis with phlegmon
Pathology	Catarrhal appendicitis with granulomatous giant cell reaction in perforated area	Phlegmonous appendicitis	Gangrenous appendicitis
Length of stay, days	18	9	8

ALT, alanine aminotransferase; AST, aspartate aminotransferase; BNP, brain natriuretic peptide; CPR, C-reactive protein; CT, computed tomography; IVIG, intravenous immunoglobulin; MIS-C, multisystemic inflammatory syndrome in children; PCR, polymerase chain reaction.

Figure 1 A) Case 2: exanthema in trunk and hands and conjunctival hyperaemia. B) Case 3: exanthema in face and trunk and cracked lips.

dren was suspected due to the history of recent infection in the mother and a positive rapid SARS-CoV-2 total antibody test. Intravenous immunoglobulin (IVIG) was administered, which achieved resolution of the fever but with worsening of the abdominal pain associated with features suggestive of acute abdomen. The patient underwent an abdominal computed tomography (CT) scan, which revealed perforated appendicitis and several abdominal abscesses. The absences were drained percutaneously, followed by gradual improvement. The patient underwent a delayed appendectomy at 3 months of follow-up without complications.

Case 2. Boy aged 2 years that presented with fever of 48 h' duration, malaise, abdominal pain, diarrhoea, exanthema and cracked lips (Fig. 1A). The patient had a history of oligosymptomatic COVID-19 4 weeks before. Elevation of APRs, including ferritin and D-dimer levels. The clinical and laboratory features were indicative of MIS-C, leading to initiation of steroid therapy and IVIG. The patient was afebrile for 24 h, which subsequent recurrence of fever and worsening of abdominal pain, which was located in the right iliac fossa. The sonographic findings suggested acute appendicitis, with a swollen appendiceal tip, involvement of the adjacent fatty tissue and a moderate amount of free fluid accompanied by regional lymph node enlargement. A laparoscopic appendectomy was performed, which confirmed the sonographic findings. The patient had a favourable outcome after surgery.

Case 3. Girl aged 2 years with abdominal pain of 2 days' duration, fever of 24 h' duration, exanthema and cracked lips (Fig. 1B). The patient had a history of mild COVID-19 5 weeks before. The physical examination revealed signs of peritoneal irritation, and an abdominal ultrasound scan confirmed the presence of appendiceal mass in the right iliac fossa. The laboratory tests detected elevation of APRs, including ferritin and D-dimer levels. The patient underwent a laparoscopic appendectomy followed by resolution of fever 24 h later and of the exanthema and buccal lesions in the days that follow. Given the resolution of symptoms and the absence of cardiac involvement, treatment with steroid therapy or IVIG was deemed unnecessary.

The pathological examination of the surgical specimen confirmed the diagnosis of acute appendicitis in all 3 cases.

The association between acute appendicitis and other paediatric inflammatory syndromes, like Kawasaki disease,[5] is well known, although the underlying pathophysiological mechanism has not been elucidated. In the case of MIS-C, it is suspected that the inflammatory changes that lead to the occlusion of the appendiceal lumen, and in turn to acute appendicitis, could be secondary to reactive lymphoid hyperplasia resulting from viral colonization of the bowel (and made possible by the abundance of ACE-2 receptors in the intestine) and/or the vasculitis produced in MIS-C, which causes ischaemia-reperfusion events[6] that could damage the appendiceal artery.[2,3]

Its pathophysiology notwithstanding, in patients with suspected MIS-C or a history of recent SARS-CoV-2 infection presenting with abdominal symptoms, clinicians should contemplate the potential complication of acute abdomen secondary to acute appendicitis, even at atypical ages (in our case series, 2 patients were only 2 years old). Therefore,

these patients require close monitoring and early ordering of abdominal imaging tests in cases of protracted disease. If the abdominal ultrasound findings are not conclusive and acute abdomen is suspected based on the physical examination, an abdominal computed tomography scan should be performed to support the diagnosis.

While there is controversy surrounding the initial management of uncomplicated appendicitis and some authors advocate for conservative treatment with antibiotherapy without appendectomy,[7] surgical treatment in our patients was crucial, and all of them improved following the intervention.

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Conflicts of interest

The authors have no conflicts of interest to declare.

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Satisfaction in telephone consultations during confinement due to COVID-19☆

Satisfacción de las consultas telefónicas realizadas durante el confinamiento por COVID-19

Dear Editor:

The outbreak of infection by a novel coronavirus (SARS-CoV-2) started in early December 2019 in Wuhan (Hubei province, China).[1,2] The declaration that the epidemic was a public health emergency of international concern led to the imposition on March 14, 2020 of the state of alert in Spain, with the establishment of population confinement measures and reorganization of work patterns with a shift to remote work. At the hospital level, it was recommended that visits be replaced by telephone consultations. Our aim was to assess the satisfaction with telephone consultations of the families of paediatric patients by means of an anonymous telephone survey.

We conducted a cross-sectional, observational and descriptive study in the department of paediatrics of the Hospital Universitario Central de Asturias (Oviedo, Spain). The study universe consisted of the families of patients that had scheduled follow-up appointments at the outpatient paediatric gastroenterology, nutrition and pulmonology clinics between March 16 (start of telephone consultations in the hospital's catchment area) and May 11, 2020 (resumption of in-person visits). We assessed the satisfaction of families through a telephone survey, using an anonymous questionnaire that has not been validated after obtaining verbal informed consent. The questionnaire consisted of close-ended questions answered on a scale from 1 to 10 (1 indicating minimum degree, 10 maximum degree) and binary questions (yes/no) (Table 1). The study was approved by the ethics committee of the Principality of Asturias (Ref. 2020.204). Researchers did not receive any remuneration for the study.

Of the 515 scheduled visits, 408 were conducted by telephone. After excluding candidates that did not answer the phone, those that refused to participate and those that

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