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BRIEF REPORT

ACTA PÆDIATRICA NURTURING THE CHILD WILEY

The early experiences of a single tertiary Italian emergency department treating COVID-19 in children

Italy has been badly affected by COVID-19, despite strict quarantine measures. Up to 1 June 2020, 2.1% of the positive cases in Italy were aged 0-18 years, with no paediatric deaths.[1] This paper focuses on the clinical features, laboratory and imaging data and outcomes of 24 patients admitted to the Emergency Department (ED) at IRCCS Gaslini Children's Hospital, Genoa, Italy, from 24 February to 16 April 2020.

We virus-tested 150 children with epidemiological links to confirmed or suspected cases, fever and, or, respiratory symptoms and those transferred from other hospitals. A further five patients with confirmed COVID-19 were accepted from other hospitals.

The 24 patients (13 female) had a median age of 6.9 years (range 14 days-18 years) and their epidemiological and clinical features are shown in Table S1. Of these 14 had virus positive family members, seven had suspected but untested family cases and three had no known family exposure.

We found that three were asymptomatic on admission, despite confirmed family cases, 20 had fever (mean duration 2 days, range 1-10) and 14 had a mainly dry cough. Only two patients had an axillary temperature over 39°C, five had gastrointestinal symptoms, two had vomiting and three diarrhoea, five had poor feeding, six had nasal discharges, two had sore throats and one had a headache. None had dyspnoea or cyanosis. Pulse oximetry was more than 95% in all cases.

Three patients presented with reduced breath transmission to the lung bases, while two had scattered rales. One had mild fever and a cough, followed by bilateral itching and burning violaceous lesions of the toes, consistent with erythema pernio.

Blood tests were performed on 10 patients. All had normal white blood cell counts, normal coagulation tests and transaminases, negative procalcitonin and minimally increased D-dimer. Four had lymphopenia and C-reactive protein was slightly increased in three cases. Chest X-rays were performed on five patients following abnormal chest examinations or due to their past medical history. One had initial alveolar consolidation, and received empirical antibiotic therapy, and one had peribronchovascular thickening.

Two adolescent sisters with fever, cough and rales on auscultation underwent computed tomography (CT). We also scanned a girl with systemic lupus erythematous, discussed below, because of her underlying disease and thromboembolic risk. All showed bilateral ground glass areas (Figures S1 and S2).

None of the 11 hospitalised patients required oxygen therapy, respiratory support or intensive care unit and none died. The three girls with lung lesions received hydroxychloroquine for 10 days and symptoms resolved in 7 days.

Of interest, three patients had pre-existing conditions. Two had chromosomal deletion. The 15-year-old girl had spastic tetraplegia and severe scoliosis and was discharged after 3 days' observation. The 7-year-old boy also had hydrocephalus and congenital cardiopathy and presented with vomiting and feeding difficulties. He received intravenous fluids and was discharged after 8 days. An 18-year-old girl with systemic lupus erythematous, obesity, paraplegia and deep vein thrombosis of the right iliac-femoral axis had received hydroxychloroquine, mycophenolate mofetil, prednisone and fondaparinux before testing positive. On admission, she reported anosmia and ageusia and mild chest pain. She continued receiving prednisone and mycophenolate mofetil. Hydroxychloroquine was increased to 400 mg twice daily and fondaparinux to 7.5 mg daily. Her clinical course was satisfactory, with no respiratory complications, no further thromboembolic events and gas exchange preservation.

The majority, 13/24, were discharged after ED evaluation and were followed up by family paediatricians. A 2-month-old boy returned to the ED with diarrhoea.

Our data confirmed other epidemiological studies showing that children of all ages were equally susceptible to the virus, including newborn infants,[2] and that the clinical manifestations may be very heterogeneous. Children also experienced milder COVID-19 than adults and showed a faster recovery and better prognosis.

The transmission route in 21/24 children was confirmed or strongly suspected family cases.

Fever and dry cough were the most frequent symptoms at onset, similar to adults, with fewer gastrointestinal signs. A 14-year-old girl with mild disease according to the Dong classification,[2] showed atypical cutaneous involvement similar to erythema pernio.

Even patients with moderate disease did not develop clinical worsening and respiratory distress.

Shen et al,[3] have recommended that children diagnosed with COVID-19 undergo a chest imaging, preferably CT.

Our observations and emerging evidence suggest that chest imaging and blood tests could be reserved for patients with respiratory involvement or at high risk due to pre-existing diseases.

Our series included three patients with special healthcare needs. The two with chromosomal deletion had some features that potentially predisposed them to respiratory failure, namely severe scoliosis and congenital cardiopathy. Their blood examinations and chest X-rays were normal and overall, they had benign disease with no need for respiratory support.

Immunosuppression is a known risk factor for severe infections but relevant data on COVID-19 are scarce.

Interestingly, the girl with systemic lupus erythematous was taking drugs suggested for COVID-19 therapy, hydroxychloroquine, steroids and heparin, before testing positive. Even though her CT scan showed bilateral ground glass areas, she had a good clinical course without other complications.

Further research and surveillance are needed to clarify how COVID-19 affects children and how children with pre-existing conditions should be managed.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.