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SARS-CoV-2 and croup, a rare relationship or coincidence?

Dear Editor,

With interest we have read the series of 3 children with croup ascribed to COVID-19, written by Venn and colleagues [1]. In April 2020 an anxious 18-month-old boy was admitted at our hospital with respiratory distress, inspiratory stridor, barking cough, fever and oxygen saturation of 89%. Diagnosed with severe croup, he was treated with oxygen supplementation and dexamethasone. As part of our policy during COVID-19 pandemic, we performed RT-PCR for SARS-CoV-2 in all children admitted with respiratory complaints. This boy was found PCR positive. Unlike the described patients by Venn et al, our patient rapidly improved: after a few hours oxygen supplementation could already be stopped and the boy was discharged after 12 h. Since SARS-CoV-2 had not yet been described as a cause of croup in children, we performed multiplex RT PCR testing for all common respiratory viruses, which was not only positive for SARS-CoV-2 but also for enterovirus. We performed analysis of the electronic health records of all children presented to our emergency department in 2020. From the 16 patients presented with croup, only the above mentioned patient had a positive PCR for SARS-CoV-2 (and for enterovirus).

Croup has been described in a minority of cases in relation to other coronaviruses (NL63, OC43, 229V). In those cases with croup, most often co-infections were found, just as in our patient, and single infections are rare [2–4]. In multiple large retrospective reviews and prospective studies of COVID-19 in children croup is not reported as presenting symptom of SARS-CoV-2 infection in children [5–7]. In our case SARS-CoV-2 was believed to be an “innocent co-infection” and not the causative viral pathogen. We agree with the authors that SARS-CoV-2 testing is indicated in children presenting with croup for isolation measures and – if positive – to check for co-infections to establish the relationship between SARS-CoV-2 and croup. However, we do not believe that SARS-CoV-2 is a frequent causative agent of (more) severe croup in children, and advise to review the patient for other causes of barking cough or atypical croup after stabilization, including considering repeat PCR testing.

Author contributions

Drs CLHB, NWR, TWK and SWJTL have written and critically reviewed the manuscript for important intellectual content. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Declaration of Competing interest

All authors report no potential conflicts of interest.

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References

- [1] Venn AMR, Schimdt JM, Mullan PC. A case series of pediatric croup with COVID-19. *Am J Emerg Med*. 2020. Sep 15. <https://doi.org/10.1016/j.ajem.2020.09.034> S0735-6757(20)30829-9.
- [2] Miller EK, Gebretsadik T, Carroll KN, Adler B, Shell R. Viral etiologies of infant bronchiolitis, croup and upper respiratory illness during 4 consecutive years. *Pediatr Infect Dis J*. 2013;32(9):950–5. <https://doi.org/10.1097/INF.0b013e31829b7e43>.
- [3] Sung JY, Lee HJ, Eun BW, Kim SH, Lee SY, Lee JY, et al. Role of human coronavirus NL63 in hospitalized children with croup. *Pediatr Infect Dis J*. 2010;29(9):822–6. <https://doi.org/10.1097/INF.0b013e3181e7c18d>.
- [4] Rihkanen H, Rönkkö E, Nieminen T, et al. Respiratory viruses in laryngeal croup of young children. *J Pediatr*. 2008;152:661–5.
- [5] Liguoro I, Pilotto C, Bonanni M, et al. SARS-COV-2 infection in children and newborns: a systematic review. *Eur J Pediatr*. 2020 Jul;179(7):1029–46. <https://doi.org/10.1007/s00431-020-03684-7>.
- [6] Ludvigsson JF. Systematic review of COVID-19 in children shows milder cases and a better prognosis than adults. *Acta Paediatr*. 2020;109(6):1088–95. <https://doi.org/10.1111/apa.15270>.
- [7] Swann OV, Holden KA, Turtle, et al. Clinical characteristics of children and young people admitted to hospital with COVID-19 in United Kingdom: prospective multicentre observational cohort study. *BMJ*. 2020 Aug 27;370:m3249. <https://doi.org/10.1136/bmj.m3249>.

Caroline L.H. Brackel MD

aEmma Children's Hospital, Amsterdam University Medical Centers, Department of Pediatric Pulmonology, the Netherlands

Niels W. Rutjes MD

aEmma Children's Hospital, Amsterdam University Medical Centers, Department of Pediatric Pulmonology, the Netherlands

Taco W. Kuijpers MD, PhD

bEmma Children's Hospital, Amsterdam University Medical Centers, Department of Pediatric Immunology, Rheumatology and Infectious Disease, the Netherlands

Suzanne W.J. Terheggen-Lagro MD, PhD

aEmma Children's Hospital, Amsterdam University Medical Centers, Department of Pediatric Pulmonology, the Netherlands

*Corresponding author at: Department of Pediatric Pulmonology, Emma Children's Hospital, University Medical Centers Amsterdam, Meibergdreef 9, 1105 AZ Amsterdam, the Netherlands.

E-mail address: s.w.terheggenlagro@amsterdamumc.nl

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