Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the editor: Response to "COVID-19 associated pediatric vasculitis: A systematic review and detailed analysis of the pathogenesis" by Batu et al.

To the editor

We read with great interest the paper entitled "COVID-19 associated pediatric vasculitis: a systematic review and detailed analysis of the pathogenesis" [1] that was recently published. In this study, the authors conducted a systematic review of the literature and present cases of COVID-19 associated vasculitis in children. They describe five cases of ANCA-associated vasculitis (AAV) [2–6], including one in which the patient was initially misdiagnosed with Henoch-Schönlein purpura [5], highlighting the difficulty of diagnosing children with AAV and the importance of timely treatment to improve clinical outcomes. We recently published a case report of a 16-year-old female with a past medical history significant for asthma who was initially treated for a protracted asthma exacerbation with multiple courses of glucocorticoids and antibiotics after a mild COVID-19 infection [7]. She also underwent tympanostomy tube placement for chronic bilateral serous otitis media although she had no prior history of acute otitis media before this presentation. She subsequently developed the stigmata of granulomatosis with polyangiitis—upper airway and middle ear involvement with saddle-nose deformity, recurrent nosebleeds, bilateral chronic serous otitis media and conductive hearing loss, abnormal CT showing cavitary lesions, and PR3 and C-ANCA positivity—and was ultimately diagnosed with AAV. Our patient had no renal involvement at presentation and continues to have normal kidney function. Similar to the other patients described in the study, our patient had characteristic pulmonary findings including extensive multifocal pulmonary nodules and regions of consolidation with multiple areas of cavitation and central bronchiectasis with diffuse bronchial wall thickening as well as reactive mediastinal and hilar adenopathy. What makes our patient's presentation unique was the extent of her upper airway and middle ear involvement. She developed bilateral conductive hearing loss necessitating hearing aids which sets her clinical outcomes apart from the other pediatric patients. We found one adult patient in the literature who also developed conductive hearing loss after developing AAV following COVID-19 infection [8]. Our patient was treated with systemic glucocorticoids and rituximab during the induction phase and has done well on mycophenolate mofetil as maintenance therapy, but her hearing loss persists.

This review underscores the importance of considering AAV in a patient with a recent COVID-19 infection. The cases highlight the heterogeneity of clinical findings at presentation from common symptoms such as fevers, cough, hemoptysis, shortness of breath, fatigue, arthralgias, rash, epistasis, dark color urine to much rarer symptoms of seizure, peri-rectal necrotic wounds, and hearing loss. Recognizing the different symptoms of AAV in a child following COVID-19 will become increasingly necessary as we learn more about the role that COVID-19 plays in the development of autoimmune diseases because timely treatment may improve clinical outcomes.

Declaration of Competing Interest

The authors declare that they have no competing interests.

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Availability of data and materials

All data regarding this study has been reported in the manuscript [7]. Please contact the corresponding author if you are interested in any further information.

Ethics approval and consent to participate

The case report described in this letter was exempt from review by the Institutional Review Board of The Warren Alpert Medical School of Brown University and Lifespan Health System.

Consent for publication

Written informed consent was obtained from the patient's parents regarding the publication of the case report described in this letter. The purpose of this research was completely explained to the parents and the patient, and they were assured that their information would be kept confidential by the researchers.

References

[1] Batu ED, Sener S, Ozen S. COVID-19 associated pediatric vasculitis: a systematic review and detailed analysis of the pathogenesis. Semin Arthritis Rheum 2022;55:152047. https://doi.org/10.1016/j.semarthrit.2022.152047.
[2] Powell WT, Campbell JA, Ross F, Peña Jiménez P, Rudzinski ER, Dickerson JA. Acute ANCA vasculitis and asymptomatic COVID-19. Pediatrics 2021;147(4):e2020033092. https://doi.org/10.1542/peds.2020-033092.
[3] Fireizen Y, Shahriary C, Imperial ME, Randhawa I, Nianiaris N, Ovunc B. Pediatric P-ANCA vasculitis following COVID-19. Pediatr Pulmonol 2021;56(10):3422–4. https://doi.org/10.1002/ppul.25612.
[4] Reiff DD, Meyer CG, Marlin B, Mannion ML. New onset ANCA-associated vasculitis in an adolescent during an acute COVID-19 infection: a case report. BMC Pediatr 2021;21(1):333. https://doi.org/10.1186/s12887-021-02812-y.

Abbreviations: AAV, ANCA-associated vasculitis.

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[5] Wintler T, Zherebtsov M, Carmack S, Muntean R, Hill SJ. Acute PR3-ANCA vasculitis in an asymptomatic COVID-19 teenager. J Pediatr Surg Case Rep 2021;75:102103. https://doi.org/10.1016/j.epsc.2021.102103.
[6] Raeeskarami SR, Mousavi SH, Ashouri M, Akbariasbagh P, Assari R, Naderi S. Could COVID-19 trigger presentation or exacerbation of vasculitides? (A 14-year-old girl with newly diagnosed GPA after COVID-19 infection). Iran J Pediatr 2021;31(3). https://doi.org/10.5812/ijp.110597.
[7] Bryant MC, Spencer LT, Yalcindag A. A case of ANCA-associated vasculitis in a 16-year-old female following SARS-COV-2 infection and a systematic review of the literature. Pediatr Rheumatol Online J 2022;20(1):65. https://doi.org/10.1186/s12969-022-00727-1.
[8] Izci Duran T, Turkmen E, Dilek M, Sayarlioglu H, Arik N. ANCA-associated vasculitis after COVID-19. Rheumatol Int 2021;41(8):1523–9. https://doi.org/10.1007/s00296-021-04914-3.

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