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COVID-19-ASSOCIATED IGA VASCULITIS: A CASE REPORT

Assylzhan Messova[1], https://orcid.org/0000-0001-5373-0523
Lyudmila Pivina[1], https://orcid.org/0000-0002-8035-4866
Makhmutbay Sanbayev[2], https://orcid.org/0000-0001-8681-6972
Zhuldyz Beshimbayeva[3], https://orcid.org/0000-0001-8148-0277
Erlan Burkutov[4],
Ulzhan Jamedinova[5], https://orcid.org/0000-0003-1671-289X
Sabit M. Zhussupov[6], https://orcid.org/0000-0002-0551-126X

[1] Department of Emergency Medicine, NCJSC «Semey medical university», Semey, Republic of Kazakhstan;
[2] Department of Pediatric Surgery, NCJSC «Semey medical university», Semey, Republic of Kazakhstan;
[3] Department of hematology, Emergency Hospital of Semey city, Semey, Republic of Kazakhstan;
[4] Chief physician, Emergency Hospital of Semey city, Semey, Republic of Kazakhstan;
[5] Department of Epidemiology and Biostatistics, NCJSC «Semey medical university», Semey, Republic of Kazakhstan;
[6] Pavlodar branch of NCJSC «Semey Medical University», Pavlodar city, Republic of Kazakhstan.

We report a case of COVID-19-related IgA vasculitis (IgAV) in adult with cutaneous and gastrointestinal manifestations. IgA vasculitis (IgAV) is a systemic, immune complex-mediated, small-vessel vasculitis that typically occurs in children, however adults can also be a target of it. IgAV is more common in children after viral infections but has not yet been identified as a result of COVID-19 infection. Since the main pathogenetic mechanism of this infection is vascular damage, it is likely that vasculitis associated with COVID-19 can be a serious problem, especially in the elderly.

Keywords: *IgA vasculitis, COVID-19, Dermatology, hematology.*

Резюме

КОВИД-19 АССОЦИИРОВАННЫЙ IgA ВАСКУЛИТ: КЛИНИЧЕКИЙ СЛУЧАЙ

Асылжан Месова[1], https://orcid.org/0000-0001-5373-0523
Людмила Пивина[1], https://orcid.org/0000-0002-8035-4866
Махмутбай Санбаев[2], https://orcid.org/0000-0001-8681-6972
Жулдыз Бешимбаева[3], https://orcid.org/0000-0001-8148-0277
Ерлан Буркутов[4],
Улжан Джамединова[5], https://orcid.org/0000-0003-1671-289X
Сабит М. Жусупов[6], https://orcid.org/0000-0002-0551-126X

[1] Кафедра неотложной помощи, НАО «Медицинский университет г. Семей», Семей, Республика Казахстан;
[2] Кафедра детской хирургии, НАО «Медицинский университет Семей», г. Семей, Республика Казахстан;
[3] Отделение гематологии, Больница скорой медицинской помощи г. Семей, г. Семей, Республика Казахстан;
[4] Главный врач, Больница скорой медицинской помощи, г. Семей, г. Семей, Республика Казахстан;
[5] Кафедра эпидемиологии и биостатистики, НАО «Медицинский университет Семей», г. Семей, Республика Казахстан;
[6] Павлодарский филиал НАО «Медицинский университет Семей», г. Павлодар, Республика Казахстан.

В статье описан клинический случай иммуноглобулин А васкулита ассоциированного с COVID-19, у взрослого с кожными и желудочно-кишечными проявлениями. IgA-васкулит представляет собой системный опосредованный иммунными комплексами васкулит мелких сосудов, который обычно возникает у детей, также встречается у взрослых. IgA-васкулит чаще встречается у детей после вирусных инфекций, но нет достаточных данных указывающих, что COVID-19 может вызывать данное заболевание. Поскольку основным патогенетическим механизмом этой инфекции является повреждение сосудов, вполне вероятно, что васкулит, связанный с COVID-19, может представлять серьезную проблему, особенно у пожилых людей.

Ключевые слова: *IgA-васкулит, COVID-19, дерматология, гематология*

Түйіндеме

КОВИД-19 БАЙЛАНЫСТЫ IgA ВАСКУЛИТІ: КЛИНИКАЛЫҚ ЖАҒДАЙ

Асылжан Месова[1], https://orcid.org/0000-0001-5373-0523
Людмила Пивина[1], https://orcid.org/0000-0002-8035-4866
Махмутбай Санбаев[2], https://orcid.org/0000-0001-8681-6972
Жулдыз Бешимбаева[3], https://orcid.org/0000-0001-8148-0277
Ерлан Буркутов[4],
Улжан Джамединова[5], https://orcid.org/0000-0003-1671-289X
Сабит М. Жусупов[3], https://orcid.org/0000-0002-0551-126X

[1] Шұғыл медицина кафедрасы, «Семей медицина университеті» КеАҚ, Семей қ., Қазақстан Республикасы;
[2] Балалар хирургиясы кафедрасы, «Семей медицина университеті» КеАҚ, Семей қ., Қазақстан Республикасы;
[3] Гематология бөлімшесі, Семей қ. шұғыл медициналық көмек ауруханасы, Семей қ., Қазақстан Республикасы;
[4] Бас дәрігер, Семей қ. шұғыл медициналық көмек ауруханасы, Семей қ., Қазақстан Республикасы;
[5] Эпидемиология және биостатистика кафедрасы, «Семей медицина университеті» КеАҚ, Семей қ., Қазақстан Республикасы;
[6] «Семей Медицина университеті» ҚеАҚ Павлодар филиалы, Семей қ., Қазақстан Республикасы.

Мақалада тері және асқазан-ішек жолдарының зақымдануы бар COVID-19 инфекциясымен шақырылған иммуноглобулин А васкулитімен науқас сипатталған. IgA васкулиті – бұл әдетте балаларда кездесетін, бірақ ересектерде де болатын жүйелік иммундық кешен арқылы жүретін ұсақ тамырларды зақымдайтын васкулит. Кейбір вирустық инфекциялардан кейін IgA васкулиті балаларда жиі кездеседі, бірақ COVID-19 ауруды тудыруы мүмкін екенін көрсететін дәлелдер жеткіліксіз. Бұл инфекцияның негізгі патогенетикалық механизмі қан тамырларының зақымдануы болғандықтан, COVID-19-бен байланысты васкулит, әсіресе егде жастағы адамдарда маңызды мәселе болуы мүмкін.

Түйін сөздер: *IgA-васкулит, COVID-19, дерматология, гематология.*

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Coronavirus-19 disease is global economic and healthcare burden, with more than 519 million cases and 6.26 million deaths [10]. Typically, patients present with fever, CT signs of interstitial pneumonia, and respiratory distress; dermatological manifestations of infection have been reported in only a few publications [3,6,7,9]. The incidence of dermatological manifestations of Covid-19 ranged from 0.2% to 20.4% [1, 4]. We would like to report a case of IgA vasculitis (IgAV) in a COVID-19 positive patient from Kazakhstan.

Case

A-72-year old man with past history of ischemic heart disease and food allergy presented with a 5-day history of fever, fatigue. Initial laboratory test was positive for SARS-CoV-2. He has been receiving treatment at home with groprinosin for 7 days, azytromycin for 3 days. Then patient's temperature returned to normal and the patient's condition improved, but weakness remained. On the 11th day of the disease, edema of the hands (Figure 1,2), hoarseness of voice and an urticarial rash appeared on the neck, the anterior surface of the chest (Figure 1), and the extensor surface of the arms. Additionally, prednisolone and antihistamines were administered. After receiving prednisolone, the urticarial elements turned pale, however, on the same day, a petechial rash appeared on the legs, trunk, and arms. Patient complained to pain, swelling and limitation of movement in the joints of the hands, as well as abdominal pain.

On admission to hospital, vital findings were as follows: temperature, 35,9°C; heart rate of 70 beats per minute,

respiratory rate of 18 breaths per minute, blood pressure 130/80 mmHg, and SpO2 96%. Chest CT scan did not revealed pneumonia. Petechial rash was determined on his both upper and lower extremities, and trunk (Figure 3,4).

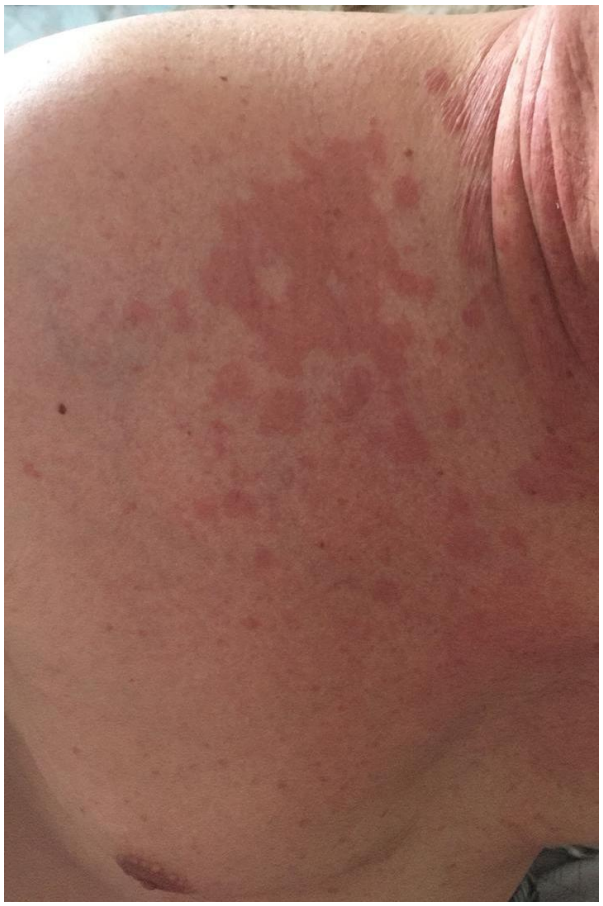

Fig. 1. Urticarial rash.

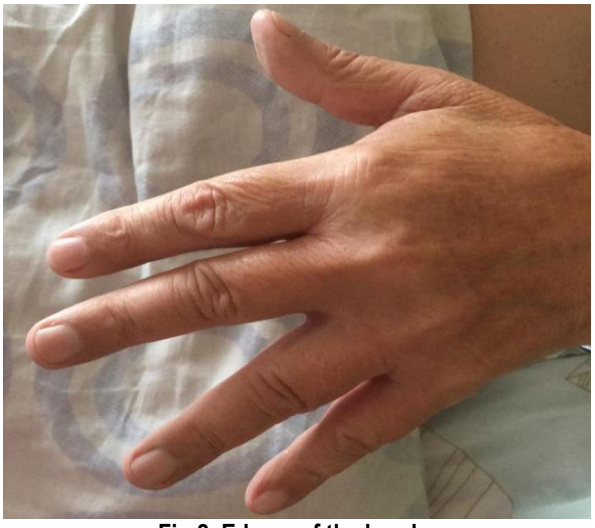

Fig.2. Edema of the hands.

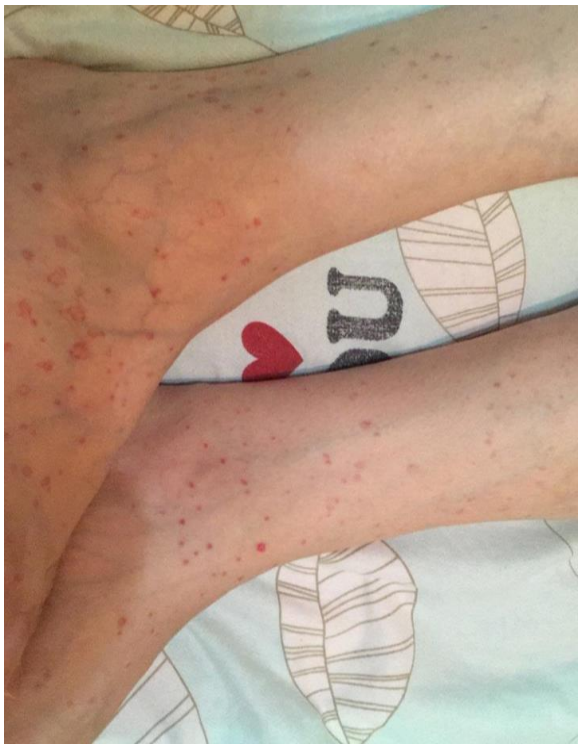

Fig. 3. Petechial rash.

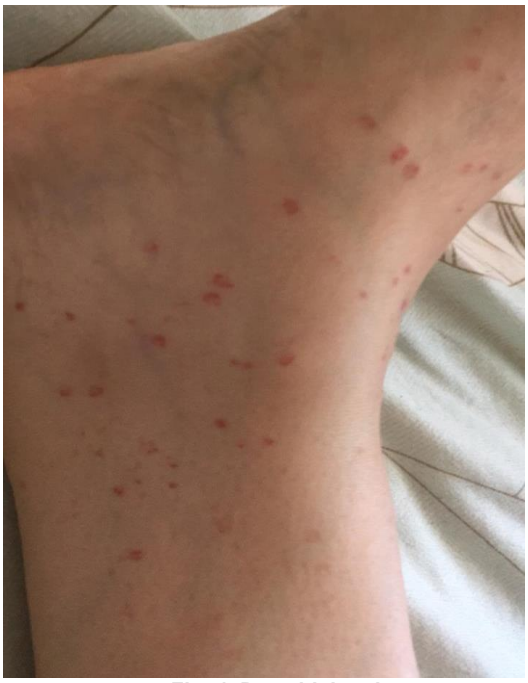

Fig. 4. Petechial rash.

The abdomen was soft but tender to deep palpation with hyperactive bowel sounds. No abdominal mass or hepatosplenomegaly was detected. The lower extremities showed no edema. Physical examination demonstrated no other abnormal findings. Upper gastroduodenoscopy revealed single areas of hemorrhage in the stomach.

Laboratory tests: hemoglobin 13.5 g/dL, white blood cell count 12.2 × 10^9/L with a normal differential count, and platelet count 308/mcl. C-reactive protein and erythrocyte sedimentation rates were 1 mg/L and 15 mm/h, respectively. Serum total protein and albumin, transaminase, blood urea nitrogen, creatinine, D-dimer, and ferritin were all within normal limits on admission to hospital. No biopsy was performed due to lack of equipment.

Because HV-related skin and gastrointestinal lesions (abdominal pain) were considered, treatment with prednisolone 20 mg daily for 6 weeks was initiated, and symptomatic treatment including bed rest along with a

hypoallergenic diet was started. Plasmapheresis was performed taking into account the circulation and deposition of immune complexes in the walls of blood vessels in vasculitis. Pentoxifylline was also prescribed due to its anti-inflammatory, immunomodulatory and bronchodilatory effects. Abdominal pain improved seven days after initial therapy. The petechial elements also began to dissolve within a week and fully recovered within 3 weeks of treatment. Prednisolone treatment was discontinued gradually. The patient was followed up for 2 months in the absence of IgAV symptoms. We received the consent from the patient to publish this report.

Discussion

COVID-19 patients have endothelial inflammation, apoptosis, and dysfunction. Endotheliitis and endothelial cell damage can lead to vasculitis in COVID-19 patients. COVID-19 associated IgA vasculitis was described by Allez et al. in 24-year-old man with skin rash, intense asymmetric arthralgia, periarticular swelling, and abdominal pain [1]. Hoskins et al. presented pediatric case of IgAV secondary to COVID-19 infection. 2-year-old male had nonblanching, violaceous rash, which resolved after steroid treatment [5].

Corticosteroids, immunosuppressive drugs, monoclonal antibodies, anticoagulants, antiplatelet agents, and immunoglobulin therapy are some of the most popular medications used to treat vasculitis [11]. Pentoxifylline had immunomodulatory, anti-inflammatory properties, and also antiviral effects [8]. Recent studies showed effectiveness of plasmapheresis in COVID-19 patients due to reducing the burden of cytokines and viruses [2]. In our case. a positive treatment effect was observed with a combination of glucocorticoids, plasmapheresis and pentoxifylline.

Conclusion

IgAV is mainly described in the pediatric population, but it also occurs in adults. The article presents one of the first reported cases of IgAV associated with COVID-19 in Kazakhstan. As the number of COVID-19 patients grows around the world, doctors should pay close attention to skin manifestations in patients, as they may suggest a more serious diseases. More research is needed to develop a comprehensive treatment plan for COVID-19 associated vasculitis.

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Authors contributions:

Conceptualization: Messova A., Burkutov E., Zhussupov S.M.;
Data curation: Beshimbayeva Zh., Jamedinova U.;
Formal analysis: Messova A., Pivina L.;
Methodology: Pivina L., Sanbayev M., Beshimbayeva Zh.;
Software: Sanbayev M., Jamedinova U.
Validation: Burkutov E, Pivina L.
Visualization: Sanbayev M.
Writing original draft: Messova A., Sanbayev M.
Writing-review and editing: Pivina L., Burkutov E., Beshimbayeva Zh.

References:

1. *Allez M., Denis B., Bouaziz J., Battistella M., Zagdanski A., Bayart J., et al.* Arthritis Rheumatol; Hoboken, N.j: 2020 Nov 1. Covid-19 Related IgA Vasculitis. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7361577/ [Internet] [cited 2021 Oct 22].72(11).1952–3.

2. *Balagholi S., Dabbaghi R., Eshghi P., Mousavi S.A., Heshmati F., Mohammadi S.* Potential of therapeutic plasmapheresis in treatment of COVID-19 patients: Immunopathogenesis and coagulopathy // Transfus Apher Sci. 2020.59(6).102993. doi:10.1016/j.transci.2020.102993

3. *Daneshgaran G., Dubin D.P., Gould D.J.* Cutaneous Manifestations of COVID-19: An Evidence-Based Review // Am J Clin Dermatol. 2020.21(5).627-639. doi: 10.1007/s40257-020-00558-4. PMID: 32865778; PMCID: PMC7456663.

4. *Guan W., Ni Z., Hu Y., Liang W., Ou C., He J., et al.* Clinical characteristics of coronavirus disease 2019 in China // N Eng J Med. 2020.382.1708–20.

5. *Hoskins B., Keeven N., Dang M., Keller E., Nagpal R.* A child with covid-19 and immunoglobulin a vasculitis // Pediatr. Ann. 2020.50(1).e44–e48.

6. *Jindal R., Chauhan P.* Cutaneous manifestations of coronavirus disease 2019 in 458 confirmed cases: A systematic review // J Family Med Prim Care. 2020;9(9):4563-4569. doi: 10.4103/jfmpc.jfmpc_872_20. PMID.33209764.PMCID. PMC7652150.

7. *Mayor-Ibarguren A., Feito-Rodriguez M., Quintana Castanedo L., Ruiz-Bravo E., Montero Vega D., Herranz-Pinto P.* Cutaneous small vessel vasculitis secondary to COVID-19 infection: a case report // J Eur Acad Dermatol Venereol. 2020.34(10).e541-e542. doi: 10.1111/jdv.16670. Epub 2020 Jul 3. PMID: 32441876; PMCID: PMC7280661.

8. *Seirafianpour F., Mozafarpoor S., Fattahi N., Sadeghzadeh-Bazargan A., Hanifiha M., Goodarzi A.* Treatment of COVID-19 with pentoxifylline: Could it be a potential adjuvant therapy? // Dermatol Ther. 2020 Jul.33(4). e13733. doi: 10.1111/dth.13733. Epub 2020 Jun 26. PMID: 32473070; PMCID: PMC7300917.

9. *Singh H., Kaur H., Singh K., Sen C.K.* Cutaneous Manifestations of COVID-19: A Systematic Review // Adv Wound Care (New Rochelle). 2021 Feb;10(2):51-80. doi: 10.1089/wound.2020.1309. Epub 2020 Oct 19. PMID: 33035150.

10. WHO Coronavirus Disease Dashboard. https://covid19.who.int. Accessed May 2013 2020.

11. *Wong Kalai et al. "*COVID-19 associated vasculitis: A systematic review of case reports and case series // Annals of medicine and surgery (2012) vol. 74 (2022). 103249. doi:10.1016/j.amsu.2022.103249

Address for Correspondence:
Assylzhan Messova, MD, PhD, associated professor, Department of Emergency, Semey Medical University, Semey, Republic of Kazakhstan.
Mailing Address: Republic of Kazakhstan, 071400, Semey, Abay st.103.
E-mail: assylzhan2006@mail.ru
Phone: +77772138307