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Methods: We assessed our electronic database to identify three cases of IgA nephropathy who were later diagnosed with aHUS. We noted clinical, laboratory, and clinical course history to diagnose these cases as aHUS. We investigated these cases for aHUS with anti-factor H levels and genetic analysis to identify possible genetic mutations.

Results: A 26-year-old female was diagnosed with chronic kidney disease (CKD) diagnosed with biopsy-proven IgA nephropathy, ESRD on maintenance hemodialysis (MHD) since the year 2017. In April 2021, she was shifted to our center for MHD. At presentation, she had anemia, thrombocytopenia, with a history of intra- and inter-dialytic hypertension. Despite adequate dialysis, five antihypertensive drugs, and all supportive measures, she was having consistently elevated BP beyond 170/90 mmHg and had a persistent headache. After six months of treatment, her anemia improved but she had persistent thrombocytopenia (platelet counts <100000 cells/µm³). With a strong suspicion of aHUS, we investigated her for anti-factor H (AHF) levels. She had highly elevated AHF levels with a value of 1042.5 AU/ml. Genetic analysis is awaited.

A 23-year-old male presented to a peripheral hospital with loose stools, vomiting, hypertensive emergency (BP 180/100 mmHg), and bilateral subconjunctival hemorrhages. He was then referred to us in view of renal insufficiency. On renal biopsy, he was diagnosed with IgA nephropathy. He was initiated on hemodialysis for renal dysfunction. A persistent elevation in BP despite four antihypertensives and borderline thrombocytopenia indicated the possibility of aHUS. His AHF levels were greatly elevated (838 AU/ml). Genetic analysis revealed CFH (exon 17) heterozygous deletion, duplication in CFHR1 (exon 5, 6 and intron 1, 3) and CFHR3 (exon 1, 2, 3, 6 and intron 4).

A 22-years-old male had ischemic stroke and epilepsy in the year 2017. He presented to us in March 2021 with a history of hypertension and nocturia for one month. On evaluation, he had high BP with a serum creatinine of 2 mg/dl. He required three antihypertensives for adequate control of HTN. Renal biopsy was advised in March 2021 but due to financial constraints, the patient returned for biopsy in July 2021. Renal biopsy revealed IgA nephropathy. Despite three antihypertensives, his BP was not controlled. In view of hypertension, young age, and renal dysfunction, we had a suspicion of aHUS. On evaluation, his AHF level was 233.5 AU/ml. His genetic analysis (multiplex ligation-dependent probe amplification) did not reveal any genetic mutation in CFH. A report of clinical exome sequence analysis is awaited.

Conclusions: These three cases represent an important finding that in patients with the diagnosis of IgA nephropathy, young age, hypertension, renal dysfunction, and thrombocytopenia (even borderline) suggests a diagnosis of aHUS. We hypothesize that IgA nephropathy was a trigger for the precipitation of aHUS in all three cases.

No conflict of interest

POS-011

PRIMARY ATYPICAL HEMOLYTIC-UREMIC SYNDROME ASSOCIATED WITH COVID-19: A BRIEF REVIEW

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Introduction: Since the first case of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was diagnosed in December 2019, coronavirus disease 2019 (COVID-19) has spread tremendously. We now know that infected individuals can experience a wide range of systemic complications, including thrombotic microangiopathy (TMA). Among the total of 45 published cases of COVID-19-associated TMA, there were 4 cases of primary atypical hemolytic-uremic syndrome (aHUS). COVID-19 likely represents a second hit of primary aHUS that manifests in genetically predisposed individuals.

Methods: We reviewed the global literature reported from the first mention of COVID-19 in 2019 to February 2022, including individual case reports and case series of adult patients with COVID-19-associated TMA. Electronic searches were conducted in the PubMed database using keywords and their combinations: "thrombotic microangiopathy, COVID-19, thrombotic thrombocytopenic purpura, atypical hemolytic-uremic syndrome".

Results: Among the total of 45 published cases of COVID-19-associated TMA, there were 18 cases reported as acquired thrombotic thrombocytopenic purpura (TTP) and 19 cases presented as mixed forms of TMA associated with multifactorial triggers (without proven abnormalities of ADAMTS13 activity or proven inhibitors of ADAMTS13 or proven Shiga toxin). The remaining 8 cases were complement-mediated TMA:

- 2 cases of hereditary aHUS (patient 1 and 2);
- 1 case of probable hereditary aHUS, where the patient had a heterozygous variant with unknown significance in complement factor I and was heterozygous for the complement factor H H3 haplotype reported as a risk factor of aHUS (patient 3);
- 1 case of aHUS with significantly elevated factor H autoantibodies in the absence of genetic testing (patient 4);
- 4 cases with decreased complement levels in the absence of genetic testing.

We focused on the 4 patients with primary aHUS. Among those, there were 2 females and 2 males with an average age of 28.75±6.18 years. Although in aHUS, there is no specific test for SARS-CoV-2 infection by a polymerase chain reaction-based test, none of the patients had any respiratory symptoms. Patients 2 and 3 underwent renal biopsies, which confirmed the diagnosis of TMA. Patients 2, 3, and 4 required treatment with hemodialysis (HD). Patient 3 did not receive any specific treatment due to delayed diagnosis and lack of availability of eculizumab, while patients 2 and 4 underwent therapeutic plasma exchange and received steroids and eculizumab (patient 2 received only the initial dose of eculizumab because further doses were not granted). Patients 2 and 3 remained HD-dependent, while the renal function of patient 4 partially recovered. Patient 1, who did not...
need HD, was treated with eculizumab and had partial recovery of renal function.

Conclusions: In conclusion, different types of TMA may occur during the course of COVID-19, including aHUS. COVID-19 likely represents a second hit of primary aHUS that manifests in genetically predisposed individuals with an underlying complement risk factor. Early identification of COVID-19-associated primary aHUS is needed in order to promptly start treatment with eculizumab.

No conflict of interest

POS-012

SCLERODERMA RENAL CRISIS AS A TRIGGER FOR ATYPICAL HEMOLYTIC UREMIC SYNDROME: A RARE CASE

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Introduction: Atypical hemolytic uremic syndrome (aHUS) may remain undiagnosed in patients with normal renal function. Precipitating factors for aHUS vary widely and may include infections, drugs, autoimmune conditions, transplants, pregnancy, and metabolic conditions. Scleroderma renal crisis can also act as a trigger for aHUS via sharing of common complement activation pathways. We here present a case of scleroderma renal crisis triggering underlying aHUS.

Methods: We searched our electronic database to identify the details of the case. aHUS was diagnosed with anti-factor H level antibodies and genetic analysis for exome sequencing. AFH levels > 100 AU/mL were considered diagnostic for aHUS.

Results: A 72-year-old women with a past medical history of primary hypertension was referred to the hospital for the diagnosis of acute renal failure. Three days prior to admission, she suffered abdominal pain, decreased urine output, her blood test revealed elevated serum creatinine of 393 umol/L, and low platelets of 43.6 K/uL. She denied history of hematologic or renal disorders, yet mentioned that she found asymptomatic covid-19 one month before admission. On admission, the vital signs was significant for a blood pressure of 140/80 mmHg. Physical examination was noted with facial oedema, upper abdominal pain, otherwise unremarkable. Laboratory test confirmed acute renal failure with the ongoing increase of serum creatinine to 575 umol/L and creatinine 575 umol/L. Her total blood count discovered thrombocytopenia and anemia, with the platelet count of 50 k/uL, and the hemoglobin of 94 g/L. Lactate dehydrogenase was in upper limit of 434 U/L, and the bilirubin level was in normal range. The peripheral blood smear showed “fragmented” RBCs. Coombs’ test was negative for both direct and indirect method. Stool examination failed to detect either red or white blood cell. Haptoglobin level was 1.14 g/L, which was in normal range (0.41-2.58 g/L). Ddimer was elevated 1376 ng/mL, and the fibrinogen 6.37 g/L. Immunology investigation was conducted with the result of normal level for both complement C3 and C4, negative reaction for anti-cardiolipin IgM and IgG, anti MPO, anti PR3, RF, anti-streptolysin O. Bone marrow aspiration did not show abnormalities. There were Forrest III gastric ulcers found by gastric endoscopy (two ulcers with diameter of 9mm and 10mm, with pseudo-membrane covered). Initially she was treated symptomatically with amlopin, intravenous PPI, and IV furosemide. As the kidney function was getting worse, hemodialysis was initiated at day 1, day 3, day 6, and day 10 of admission. Renal biopsy was performed and showed active thrombotic microangiopathy. Given the normal complement profile, and negative C3c staining on immunofluorescence of renal biopsy investigation, complement mediated TMA may not be the pathogenesis of this case. The patient was started for anticoagulant therapy, initially subcutaneous low molecular weight heparin and then oral anti-vitamin K. She obtained dramatic recovery with dialysis off, increased urine output, normalized platelets and red cell count, and serum urea and creatinine back to nearly normal range at discharge.

Conclusions: Complement related thrombotic microangiopathy is a rare and severe condition. This case of TMA after covid-19 reveals a non-complement mediated pathogenesis, with different treatment. Anticoagulation is an effective therapy in hypercoagulation induced TMA.

No conflict of interest

POS-014

USE OF ECULIZUMAB FOR ATYPICAL HEMOLYTIC UREMIC SYNDROME AND SECONDARY THROMBOTIC MICROANGIOPATHY: CASE SERIES

VITKAUSKAITE, M1,4, VINIKOVAS, A2,3, MIGLINAS, M2,3, RIMSEVICIUS, L2,3, CERKAUSKAITE, A1,4, MACIONIENIE, E4, ASAKIENIE, E4
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Introduction: Eculizumab is a humanized monoclonal antibody that prevents the formation of the terminal complement complex. It is associated with hematologic and renal recovery along with cessation of immunological damage in the TMA patient. Eculizumab has been approved by the regulatory authorities for the treatment of aHUS in both, native and transplanted kidneys. However, there is not such approval for patients with secondary TMA and use of eculizumab is based solely on a limited number of case reports.

Methods: This is a single-center report of three patients who received eculizumab either for sTMA (n=1) or aHUS (n=2). The diagnosis of HUS was made by the presence of microangiopathic hemolytic anemia, thrombocytopenia, and acute kidney injury (AKI). ADAMTS13 level was checked for TTP exclusion. All patients failed to respond to standard treatment. Mutations in genes encoding complement components were checked using PCR. Data on demographic and clinical characteristics, treatment modalities before eculizumab therapy were collected. Patients were followed for 3-12 weeks.

Results: Case 1: a 26-year-old female was admitted to the hospital due to leukopenia, anemia, thrombocytopenia, and AKI. Anuria and azotemia progressed, therefore hemodialysis was initiated. Arthralgia,