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114. SICKLE CELL DISEASE, SICKLE CELL TRAIT AND OTHER HEMOGLOBINOPATHIES, EXCLUDING THALASSEMIAS: CLINICAL AND EPIDEMIOLOGICAL
Impact of Srs-CoV2 Infection on Pain Crises and Acute Chest Syndrome in Patients with Sickle Cell Anemia: A Retrospective Multi-Cohort Study Based on USA Data from 2020-2022

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Objective: To determine the impact of SARS-CoV-2 infection on vaso-occlusive pain crisis (VOC) and acute chest syndrome (ACS), incidence, and outcomes in sickle cell anemia (SCA) patients.

Method: This retrospective study used the TriNetX USA health research network database to identify SCA patients (Hb-SS, Sβ0-thal) ages 1-50 with and without concomitant SARS-CoV-2 infection from May 2020 to May 2022. A total of 6 cohorts were created: pain crisis with/without SARS-CoV-2, ACS with/without SARS-CoV-2, and SARS-CoV-2 without pain crisis/ACS. Patients with SARS-CoV-2 and pain crisis/ACS were compared to 2 cohorts (SARS-CoV-2 without pain crisis/ACS) for demographic characteristics, baseline laboratory parameters, disease-modifying drug use, and influenza/COVID-19 vaccination status by t-tests. Pain crisis/ACS patients with SARS-CoV-2 were then compared to 2 cohorts (pain crisis/ACS without concomitant infection) for demographic characteristics, and relative risk for acute settings of care, pain control, laboratory parameters/outcomes (including hemolytic and inflammatory markers), procedures (blood transfusion) and mortality.

Results : The incidence of pain crises and ACS in SCA patients following SARS-CoV-2 infection was 34 and 27 per 100 patients, respectively. The risk of developing ACS was significantly increased by SARS-CoV-2 infection (2.57% vs. 1.17%, RR 2.2), but not the risk of developing a pain crisis (RR 1.04). Pain crisis and ACS patients with concomitant SARS-CoV-2 infection had a greater risk for inpatient services, subsequent hospital visits, opioid and non-opioid analgesia, blood transfusions, and concerning hemolytic and inflammatory markers compared to those without the infection. Patients with SARS-CoV-2 who did not develop pain crises/ACS had higher baseline hemoglobin levels prior to infection compared to patients who developed pain crisis/ACS. There was a higher rate of COVID-19 and influenza vaccination in the cohorts who did not develop pain crisis/ACS and might have improved pain crisis rates (but not ACS) following SARS-CoV-2 infection.

Conclusions: COVID-19 illness had an impact on the incidence of both pain crises and ACS, significantly increased the risk of developing ACS, and influenced morbidity outcomes for both pain crises and ACS. Prior vaccination against influenza and COVID-19 may represent a protective factor for developing pain crises.

Disclosures No relevant conflicts of interest to declare.

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