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114.SICKLE CELL DISEASE, SICKLE CELL TRAIT AND OTHER HEMOGLOBINOPATHIES, EXCLUDING THALASSEMIAS: CLINICAL AND EPIDEMIOLOGICAL

Risk and Protective Factors for COVID-19 Infection Among Pregnant Women with Sickle Cell Trait

Kim Abbegail Tan Aldecoa, MD[1,2], *Camelia Arsene, MD PhD MHS*[1,2], *Tiffany Chng, BS*[3,1], *Garett Cherry, BS*[3,1], *Nabila Chowdhury, MS4*[3,1], *Ryan Clark, BS*[3,1], *Dana Deeb, BS*[3,1], *Lisa Deptula, MMS*[3,1], *Grey Dietz, MS*[3,1], *Ewomamobuho Eto, BA*[3,1], *Victoria Golston, MS*[3,1], *Landon Lawson, MS*[3,1], *Chioma Mbionwu, BS*[3,1], *Obiefuna Okponyia, MD MBA*[4,1], *Jennifer Orejuela, MS*[3,1], *Thomaida Qipo*[3,1], *Sumit Raut, MD*[1,2], *Geetha Krishnamoorthy, MD*[2,1], *Judie Goodman, DO*[5]

[1] Trinity Health Oakland, Pontiac, MI
[2] Wayne State University, Detroit, MI
[3] Ross University School of Medicine, Bridgetown, Barbados
[4] Detroit Wayne County Authority Health, Detroit, MI
[5] Department of Hematology and Oncology, Trinity Health Oakland, Pontiac, MI

BACKGROUND:
Pregnant women and individuals with sickle cell trait (SCT) and underlying comorbidities are more vulnerable to severe illness from the coronavirus disease of 2019 (COVID-19) compared to nonpregnant women and those without SCT (PMID: 35916859, 34129519). However, the impact of the pandemic and factors affecting susceptibility to COVID-19 among pregnant women with SCT is unknown. This study aims to examine various factors that can alter the likelihood of COVID-19 among pregnant women with SCT, including vaccination against COVID-19 and influenza and the presence of underlying comorbidities such as cardiac disease, diabetes, obesity, renal disease, and stroke. In addition, the study aims to provide insights into the fetal outcomes among pregnant women with SCT who have contracted COVID-19.

METHODS:
A total of 295 individuals with the diagnosis of SCT who had encounters at three large hospitals in Michigan from January 1, 2022, to December 31, 2022, were screened in this retrospective study. 151 women with SCT met the inclusion criteria and are within the reproductive age group between 15-49 years old. Demographics, underlying comorbidities, fetal outcomes, and other clinical information were collected by electronic medical records review. COVID-19 and influenza vaccination were verified from the immunization records registry in Michigan. Multivariable regression analysis was used to analyze the protective or risk factors associated with COVID-19 infection. Statistical analyses were performed using the SPSS version 29 statistical software, and a p-value of <0.05 was considered statistically significant.

RESULTS:
Data was collected from 151 women with SCT, with 34% being pregnant and 66% being non-pregnant. Approximately 85% of the participants were Black, and their mean age was 32 years. 35% contracted COVID-19 among pregnant women, while 31% among non-pregnant women ($p>0.05$). In a multivariable regression analysis, the study found that pregnant women with SCT who received COVID-19 vaccine were 90% less likely to have a COVID-19 infection (OR=0.102 with 95%CI: 0.011-0.950) and 9 times more likely to have a COVID-19 infection if they had a history of pulmonary conditions such as asthma, chronic obstructive pulmonary disease, or obstructive sleep apnea (OR=9.375 with 95% CI: 1.090-80.627). There were no other protective or risk factors that showed a significant statistical association with COVID-19 infection among pregnant women, including influenza vaccination, obesity, underlying cardiac history, diabetes mellitus, renal disorder, stroke, or transient ischemic attack ($p>0.05$).
Most pregnant women with SCT who contracted COVID-19 in the study had mild-moderate disease, except for one patient who developed severe disease in the third trimester, warranting premature delivery of an infant via emergency cesarean section. 72% did not have fetal complications, except for 3 newborns who were delivered preterm (<37 weeks) and 2 with low birth weight (<2500 grams). While 2 newborns initially had a low Apgar score (APGAR<7) at 1 minute, their condition eventually improved after 5 minutes. Overall, all newborns delivered to COVID-19-infected women with SCT had a good 5-minute Apgar score.

CONCLUSION:
The study further emphasizes the importance of encouraging COVID-19 vaccination among individuals with SCT, particularly pregnant, reproductive age group women and those with underlying comorbidities. Pregnant women with SCT and underlying comorbidities should be carefully monitored to prevent severe disease, as they may be more vulnerable to COVID-19 infection. Further studies with larger sample sizes are recommended to investigate factors associated with severe COVID-19 infection among these populations.

Disclosures No relevant conflicts of interest to declare.

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