Increased Risk of Illness Severity and Hospitalization from COVID-19 in Patients with Type 1 Diabetes

As the COVID-19 pandemic rages on, researchers continue to compile data and learn more about the virus. This information has led to more focused studies regarding how COVID-19 impacts specific populations, such as individuals with diabetes. A recent study emphasizes the importance of staying vigilant about safety precautions such as handwashing and social distancing.

Using data collected from 137 hospitals, outpatient primary care, minor medical, and urgent care facilities within the Vanderbilt University Medical Center (VUMC) system, researchers analyzed the risk of hospitalization and severity of illness among patients with type 1 diabetes (T1D) diagnosed with COVID-19 compared to non-diabetics with COVID-19. According to their findings, the odds ratio of hospitalization and illness severity was three to four times higher in patients with type 1 diabetes.

Some contributing factors correlated with these outcomes were chronic hyperglycemia, vascular disease, social determinants of health, and less use of technology. Patients with T1D who used a continuous glucose monitor (CGM) and insulin pump instead of traditional blood glucose monitoring and multiple insulin injections appeared to fare better. This could also play a role in social determinants of health.

The study involved 6,451 patients who had tested positive for COVID-19 based on SARS-CoV-2 PCR results. Of those patients, 40 had T1D, 273 had type 2 diabetes (T2D), and 6,138 did not have diabetes. The researchers reviewed electronic health records of 37 of the 40 patients with T1D, and 15 consented to phone surveys to gather additional information.

According to the study, "Of the 37 chart-reviewed case subjects, 76% required no hospitalization, 14% were hospitalized without need for respiratory support or ICU admission, 3% were hospitalized and required low-acuity respiratory support, 5% required ICU admission, and 3% required endotracheal intubation and mechanical ventilation."

Overall, patients with diabetes had higher hospitalization rates and demonstrated worsening illness severity than patients without diabetes. Data was adjusted for age, race, sex, hypertension, smoking, and BMI. When it came to mortality, there were no deaths in the group with T1D, but death occurred in 4.8% of patients with T2D and 0.5% of patients without diabetes.

While this was a small study, findings were similar to that of a larger study conducted by the National Health Service (NHS) in England. It re-enforces the need for continued adherence to recommended safety practices to help reduce the spread of the virus. Researchers anticipate that as more activities move indoors in the winter months and communities grow tired of social distancing, hospitals will see an increased number of patients with T1D and T2D with COVID-19. They could have greater severity of illness.

There were some limitations to the study, including the fact that all of the data was obtained from a single healthcare system, and it was a relatively small sample size. Additional larger-

population studies are needed to evaluate these findings further. As scientists learn more about the virus, this can help improve focused studies.

Though not involved with this study, the Diabetes Research Connection provides critical funding to support early-career scientists with peer-reviewed research related to T1D. The area of COVID-19 is sure to be a topic of ongoing research. To learn more about current projects and support these efforts, visit http://diabetesresearchconnection.org.