COVID-19-related thrombotic complications experience before and during delta wave

Karen Manzur-Pineda, MD, Christopher Francis O’Neil, MD, Arash Borkan, MD, Maria Jose Lalama, BS, Tony Shao, MD, Naixin Kang, MD, Stefan Kennel-Pierre, MD, Marwan Tabbara, MD, Omaida C. Velazquez, MD, Jorge Rey, MD

DeWitt Daughtry Family Department of Surgery, Division of Vascular and Endovascular Surgery, Leonard M. Miller School of Medicine, University of Miami, Miami, FL

Objective: Hypercoagulability and thrombotic complications seen in patients with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), as well as the associated pathophysiology, have been reported extensively. However, there is limited information regarding the factors related to this phenomenon and its association with the Coronavirus disease 2019 (COVID-19) Delta variant.

Methods: A retrospective review including patients admitted to a tertiary center with a COVID-19 positive test and at least one acute thrombotic event confirmed by imaging between June 2020 and August 2021 was performed. We compared the rates of thrombotic events in patients with COVID-19 before and during the Delta peak. We also analyzed the association of the thrombotic complications with demographic characteristics, comorbidities, anticoagulation strategies, and prothrombotic markers while describing other complications secondary to COVID-19 infection.

Results: Of 964 patients admitted with COVID-19 diagnosis, 26.5% (n = 256) had a thrombotic event evidenced by ultrasound or computed tomography scan. Venous thromboembolism was found in 60% (n = 153), arterial thrombosis in 23% (n = 60), and both venous and arterial thromboses in 17% (n = 17) of the study cohort. Of all patients, 94% were not vaccinated. Delta variant wave (DW) patients had thrombotic episodes in 34.7% (n = 50/144) of cases compared with 25% (n = 206/820) of non-Delta wave (NDW) patients, posing an estimated risk 1.36 times higher in patients infected with COVID-19 during the DW than NDW. Overall, DW subjects were significantly younger (P < .001) with lower body mass index (P = .021) compared with NDW patients. Statistical analyses showed African American patients were more likely to have arterial thrombosis compared with the other groups when testing positive for COVID-19 (odds ratio [OR], 1.78; 95% confidence interval [CI], 1.04-3.05; P = .035, whereas immunosuppressed patients had less risk of arterial thrombosis (OR, 0.38; 95% CI, 0.15-0.96; P = .042). Female gender (OR, 2.15; 95% CI, 1.20-3.85; P = .009) and patients with active malignancy (OR, 5.99; 95% CI, 2.14-16.78; P = .001) had an increased risk of having multiple thrombotic events at different locations secondary to COVID-19.

Conclusions: COVID-19 infection is associated with elevated rates of thrombotic complications and an especially higher risk in patients infected during the Delta variant peak. We highlight the importance of vaccination and the development of new anticoagulation strategies for patients with COVID-19 with additional hypercoagulable risk factors to prevent thrombotic complications caused by this disease.

From the American Venous Forum

Thrombotic complications after radiofrequency and cyanoacrylate endovenous ablation: Outcomes of a multicenter real-world experience


Leigh Ann A. O’Banion, MD, FACS a,b, Sammi Siada, DO a, Bianca Cutler, MSN, FNP-C a, Mariya Kochubey, MD a, Tyler Collins, MD a, Anna Ali, MD a, Megan Tenet, BS b, Rachel Dirks, PhD b, Misaki M. Kiguchi, MD, MBA, FACS b

a Division of Vascular Surgery, Department of Surgery, University of California, San Francisco-Fresno, Fresno, CA
b Division of Vascular Surgery, Department of Surgery, MedStar Washington Hospital Center, Washington DC, DC

Objective: Chronic venous insufficiency (CVI) affects >40% of the U.S. population; thus, intervention for symptomatic venous disease comprises a large portion of many vascular practices. The treatment of superficial CVI has evolved from open surgical treatment to minimally invasive endovenous closure, including