

Results of a Modified Lower Extremity Venous Duplex Ultrasound Protocol for Patients with COVID-19

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Background

- COVID-19 is associated with a hypercoagulable state and an increased risk of venous thromboembolism
- Sonographers performing lower extremity venous duplex ultrasound (LEVDUS) in this setting are placed at an increased risk for exposure to COVID-19 due to close contact with these patients for an extended period of time
- There are no current guidelines regarding use of duplex ultrasound on COVID-19 patients

Research Objectives

- Evaluate outcomes of a modified lower extremity duplex ultrasound protocol in COVID-19 patients

Methods

- A retrospective review of patients with test confirmed or presumed COVID-19 at the time of study who underwent LEVDUS
- In the modified LEVDUS protocol, studies were terminated early if an acute deep venous thrombosis (DVT) was detected by sonographer
- Data between was examined from March 1, 2020 and June 30, 2020
- LEVDUS were evaluated for number of images and segments. Segments were utilized as a surrogate for time spent with the patient

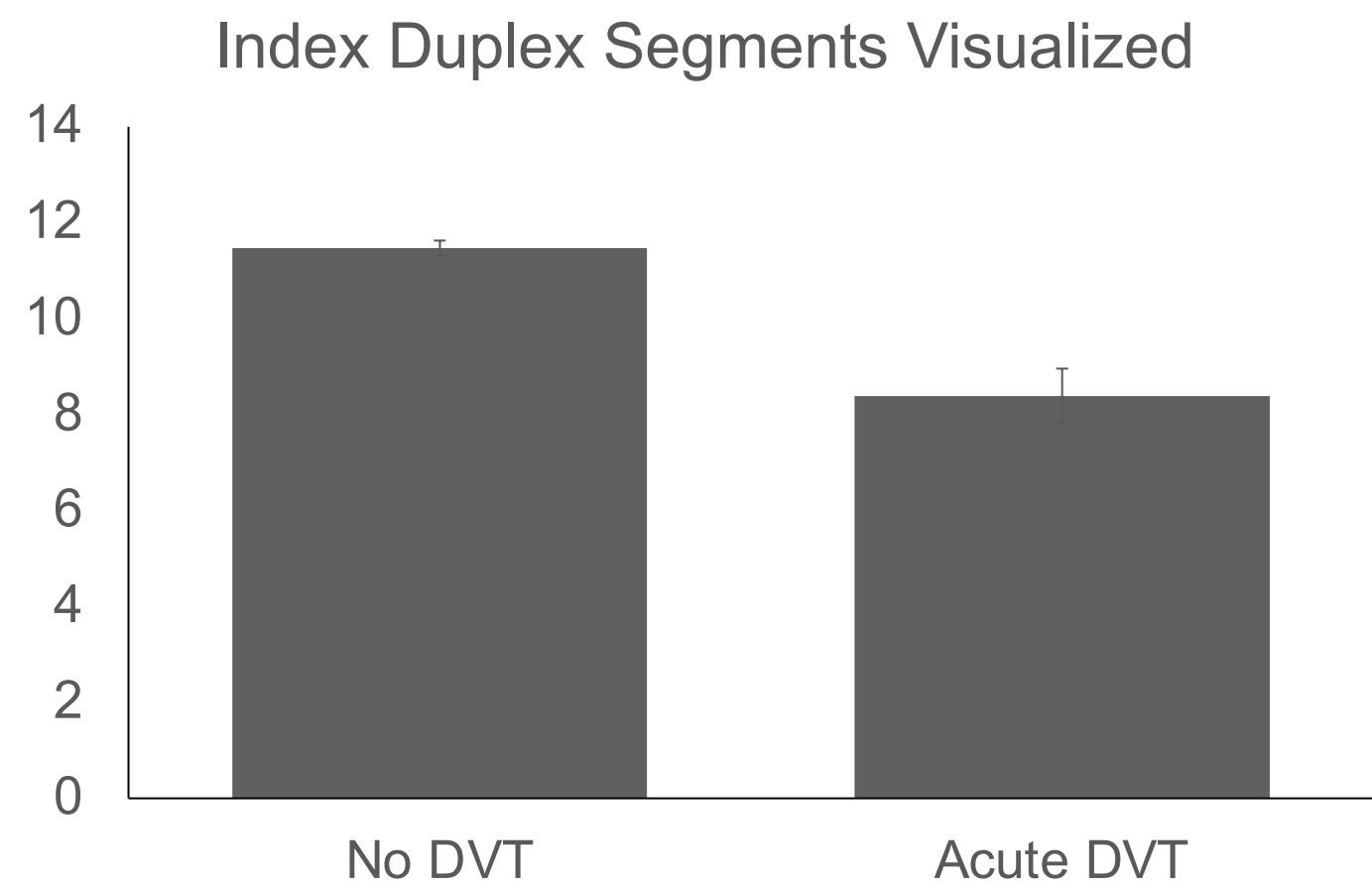
Table 1. Patient demographics

Gender	Male	92
	Female	68
Median Age		55

	Mean # of visualized segments	Mean # of visualized images
No DVT	11.5	21.8
Acute DVT	8.4	18.7
Total	10.6	21.1

Table 2. DVT types

Type of DVT	Initial Duplex	Follow up Duplex
None	108 (67.5%)	22 (57.9%)
Acute	44 (27.5%)	7 (21.4%)
Chronic	8 (5.0%)	2 (5.1%)
Resolved		3 (7.9%)
Unchanged		4 (10.5%)
Total	160	38



Results

- During this time period, 160 patients underwent 208 studies under the COVID-19 LEVDUS protocols
- These studies on average included 21.1 images (range 3-37) and visualized 10.6 of 14 possible segments (range 1-14).
- 27.5% of patients had an acute DVT, 5.0% of patients had a chronic DVT
- On follow up imaging 57.9% had no DVT, 18.4% had a new acute DVT, 23.7% had either chronic, stable, or resolved
- Only one new acute DVT was detected in an abbreviated study
- Index duplexes that were positive for acute DVT had fewer visualized segments (8.4 vs 11.5, p<0.0001).

Conclusions

- The modified COVID-19 LEVDUS protocol reduces time sonographers spend with patients with COVID-19.
- Few subsequent duplexes demonstrated new acute DVT, and nearly all (6/7) occurred in segments that had been visualized in the index study, confirming that they were not “missed” in the index study.

Limitations

- The study is limited as a single center retrospective review requiring manual data entry
- An additional limitation is the use of visualized segments as a surrogate for the time spent performing the ultrasound