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Compression Ultrasonography of the Lower Extremity With Portable Vascular Ultrasonography Can Accurately Detect Deep Venous Thrombosis in the Emergency Department

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Rationnel

- La compression veineuse des membres inférieurs au niveau de 2 points (fémoral et poplité) technique validée pour éliminer une thrombose veineuse profonde (TVP)
- Après un apprentissage de la technique aux urgentistes pendant **seulement 10min** avec un appareil d'échographie portable
- Comparaison par rapport aux examens complets réalisés par les radiologues

Méthodes

Methods: This was a prospective, cross-sectional study and diagnostic test assessment of a convenience sample of ED patients with a suspected lower extremity deep venous thrombosis, conducted at a single-center, urban, academic ED. All physicians had a 10-minute training session before enrolling patients. ED compression ultrasonography occurred before Department of Radiology ultrasonography and involved identification of 2 specific points: the common femoral and popliteal vessels, with subsequent compression of the common femoral and popliteal veins. The study result was considered positive for proximal lower extremity deep venous thrombosis if either vein was incompressible or a thrombus was visualized. Sensitivity and specificity were calculated with the final radiologist interpretation of the Department of Radiology ultrasonography as the criterion standard.

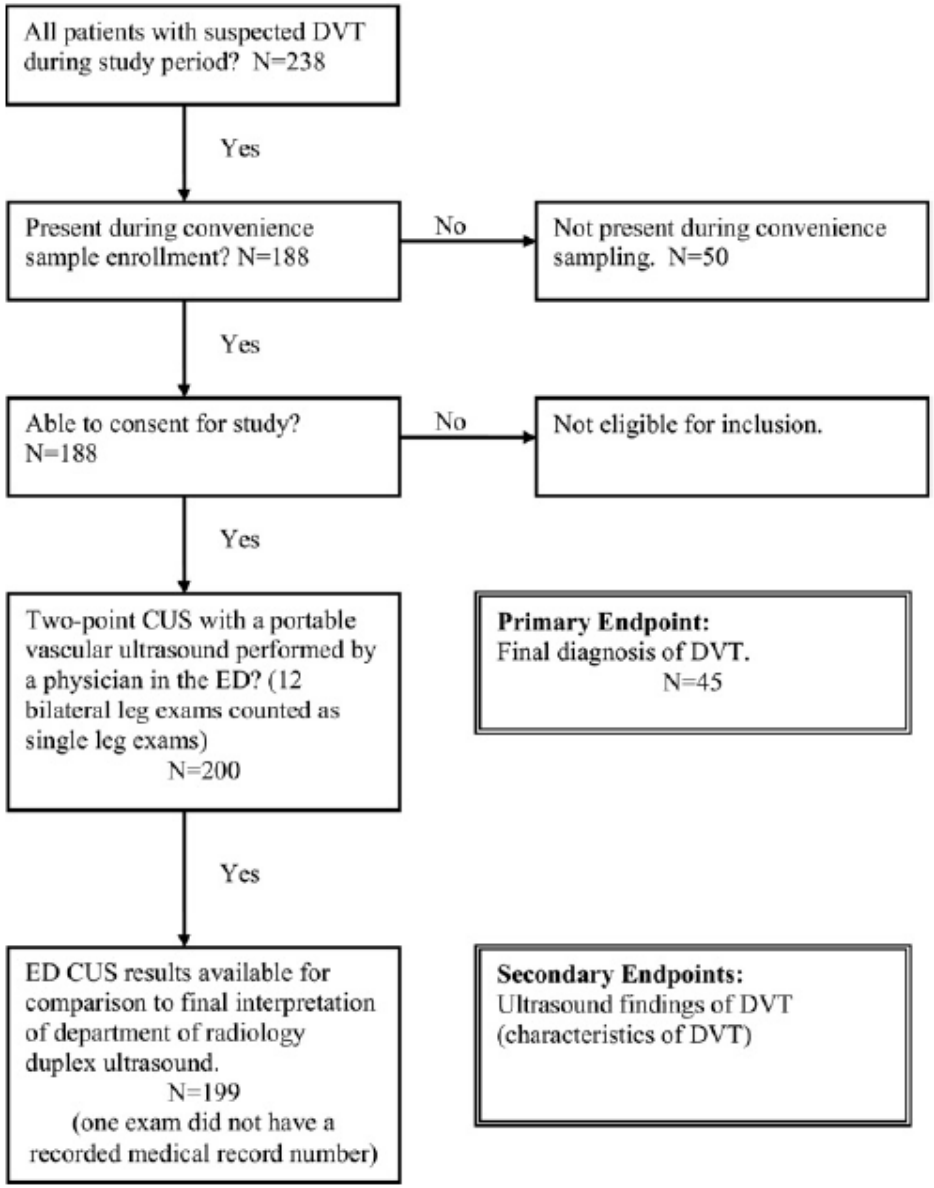

Figure 1. Flow diagram of study design and endpoints. *DVT*, Deep venous thrombosis; *CUS*, compression ultrasonography.

Table 1. Sensitivity and specificity of ED two-point compression ultrasonography, using Department of Radiology ultrasonography as the gold standard.

ED Ultrasonography Category	Positive DOR Ultrasonographic Results	Negative DOR Ultrasonographic Results
Positive ED compression ultrasonography	45	1
Negative ED compression ultrasonography	0	153
Sensitivity, %	100 (95% CI 92–100)	
Specificity, %		99.4 (95% CI 96–100)

DOR, Department of Radiology.

Table 3. ED compression ultrasonography DVT characteristics.

	Total Number	Popliteal	Femoral	Both (Popliteal+Femoral)
Total DVT	45	11	20	14
Incompressible with thrombus	22	3	8	11
Incompressible only (no thrombus)	17	6	8	3
Thrombus only	6	2	4	0

Le seul malade qui les urgentistes ont identifié positif et négatif par les radiologues est revenu positive pour TVP après une semaine

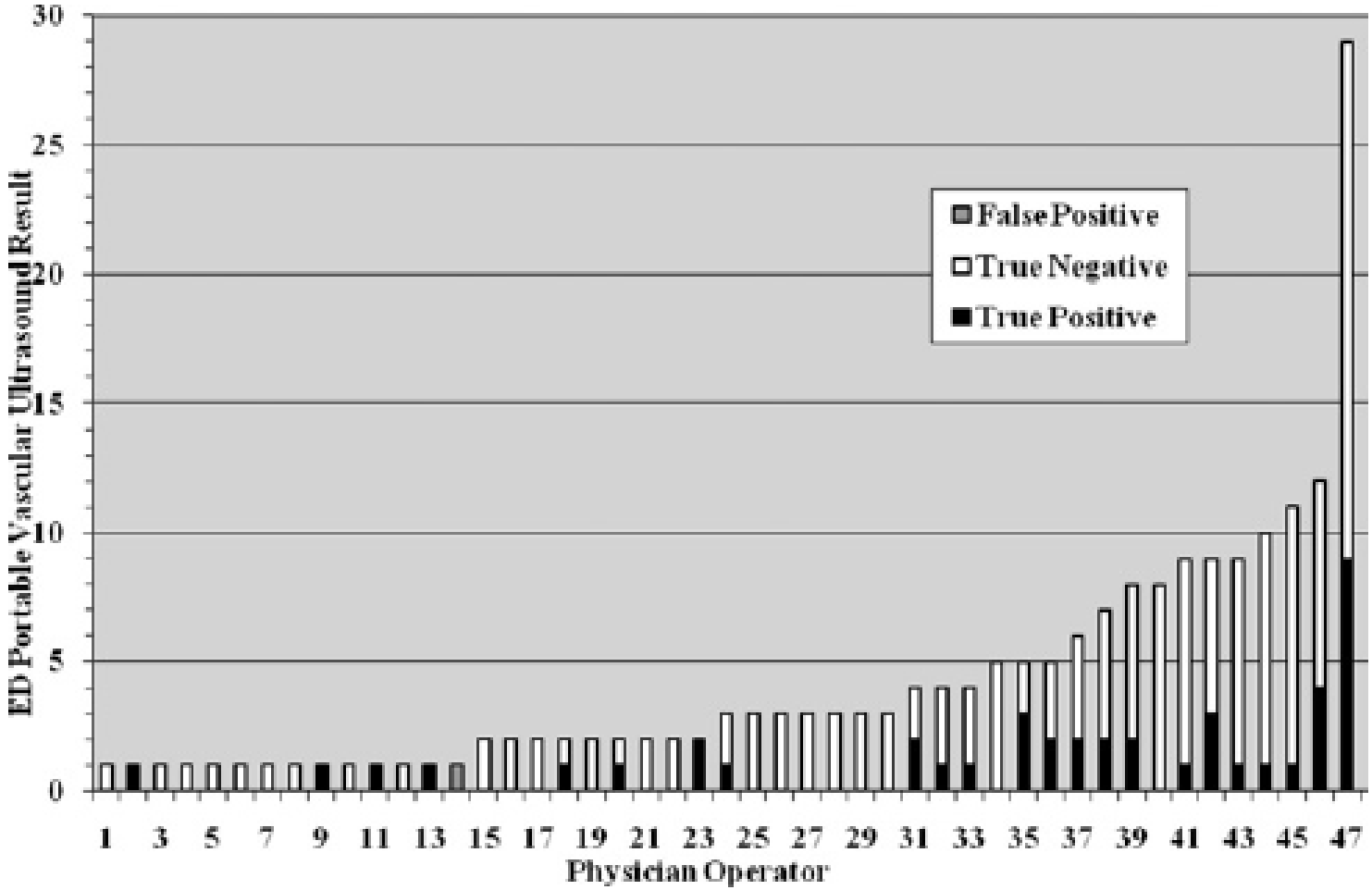

Figure 2. Histogram demonstrating results by operator. The 47 enrolling physicians are plotted on the horizontal axis, with the 199 ED compression ultrasonographic results shown. The single false-positive result occurred as the only enrolled examination for 1 physician operator, and 1 operator enrolled a total of 29 patients.

CONCLUSION

- Emergency physician–performed 2-point compression ultrasonography of the lower extremity with a portable vascular ultrasonographic machine, conducted in the ED by this physician group and in this patient sample, **accurately identified the presence and absence** of proximal lower extremity deep venous thrombosis