

Evaluation of the patient with a suspected deep vein thrombosis (DVT) in an outpatient setting

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Case Presentation

A 55 year old male with a PMH of HTN, DM2, and HLD, presented to clinic with acute onset of right leg pain, swelling, and redness for 2 days. On examination, he has unilateral 2+ pitting edema and tenderness to palpation. His D-dimer was positive at 702 ng/ml, however, lower extremity doppler ultrasound (U/S) was negative for DVT. He was sent home. 45 days later, he presented with dyspnea and was found to have a pulmonary embolism (PE).

Introduction

- Venous thromboembolism (VTE) causes significant morbidity and mortality. Prevalence is about 100 in 100,000 individuals annually with about 300,000 VTE-related deaths annually. Among deaths, 7% are treated VTE, 34% are sudden fatal pulmonary embolism, and 59% are undetected PE.¹⁶
- Many studies have validated the use of clinical probability assessment, D-dimer screen, and +/- initial U/S study to evaluate a suspected deep vein thrombosis (DVT).^{12,13,14}
- This is a literature review of available modalities of evaluating a patient with a suspected DVT
- Objectives are to aid the primary care provider in determining what is the best method of care for patients with a negative initial negative U/S of the lower extremity.

Methods

- PubMed database search for articles published from January 1970-March 2012 was conducted for this literature review.
- Included studies were prospective cohort studies, randomized controlled trials, and meta-analyses.
- Keywords: VTE, DVT, compression U/S, D-dimer, pretest probability.

Results

Figure 1: Modalities for diagnosis of VTE or DVT.

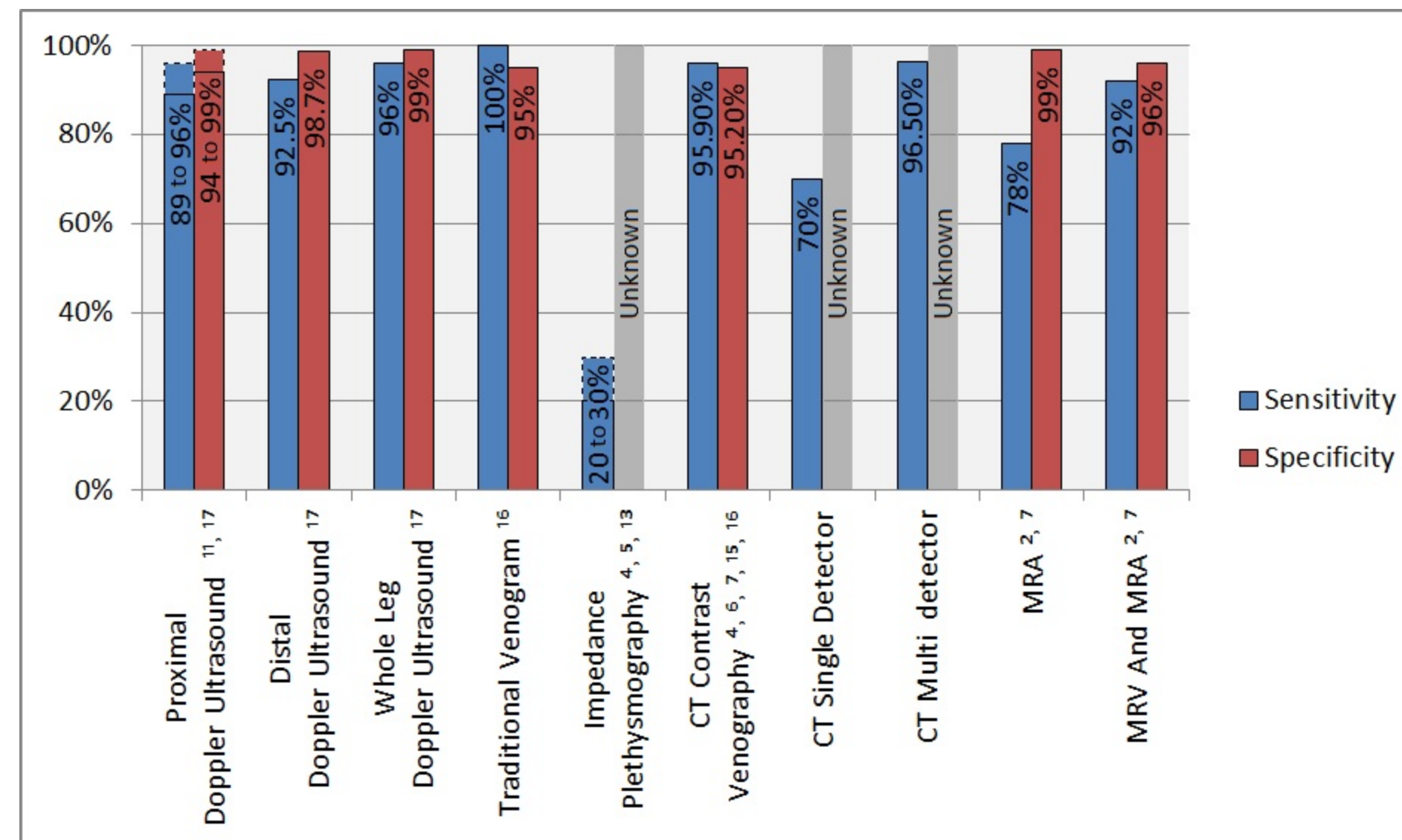


Figure 2: Leg veins¹⁰

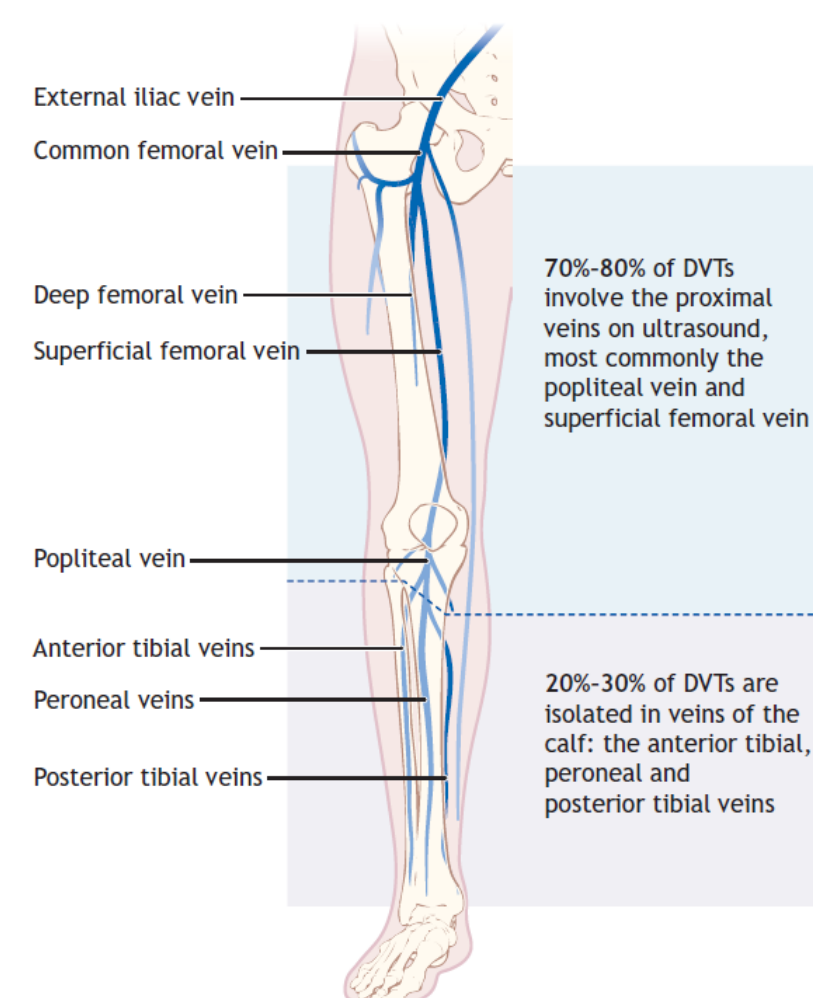


Table 1: Well's pretest probability for DVT¹⁰

Clinical characteristic†	Score
Active cancer (treatment ongoing, administered within previous 6 mo or palliative)	1
Paralysis, paresis or recent plaster immobilization of the lower extremities	1
Recently bedridden > 3 d or major surgery within previous 12 wk requiring general or regional anesthesia	1
Localized tenderness along the distribution of the deep venous system	1
Swelling of entire leg	1
Calf swelling > 3 cm larger than asymptomatic side (measured 10 cm below tibial tuberosity)	1
Pitting edema confined to the symptomatic leg	1
Collateral superficial veins (nonvaricose)	1
Previously documented DVT	1
Alternative diagnosis at least as likely as DVT	-2

*A score of 2 or higher indicates that the probability of DVT is "likely"; a score of less than 2 indicates that the probability is "unlikely."
†In patients who have symptoms in both legs, the more symptomatic leg is used.

Conclusions

- Best evidence for the outpatient setting is to first perform pretest probability testing, then if:
 - Low probability → only D-dimer, if -, can safely exclude DVT⁸
 - Moderate-high probability → Doppler U/S
 - Repeat U/S depends on whether initial U/S was 2-point vs. whole-leg U/S
 - Combined VTE event rate at 3 mo's was 0.57%⁸ (0.2-1.2%¹¹)
 - Withholding anticoagulation following a single negative whole-leg U/S was associated with a low risk of VTE during 3-month follow up in a meta-analysis by Johnson et al. in 2010.^{8,11,17}
- Limitations: This project was not a meta-analysis.
- Return to case: Patient had moderate pretest probability, positive D-dimer, and negative whole-leg U/S. Unlikely to have benefit from empiric anticoagulation. He just happens to be unlucky few who develop PE within a 3-month period despite having negative U/S.

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