9 min

Tibial Veins: Why Are They Important?

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DISCLOSURE

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No Relevant Financial Relationship Reported

STRANDNESS SYMPOSIUM

Tibial Veins: Why Are They Important?

"What is a pancreas, anyhow? I mean, I don't know what the damn thing does for you, besides give you cancer?"

Tibial veins are important because

… they clot!

CHEST Supplement

ANTITHROMBOTIC THERAPY AND PREVENTION OF THROMBOSIS, 9TH ED: ACCP GUIDELINES

Antithrombotic Therapy for VTE Disease

Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines

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Selective Approach to Calf Duplex

Whether patients with isolated distal DVT (DVT of the calf [peroneal, posterior tibial, anterior tibial veins] without involvement of the popliteal or more proximal veins) are identified depends on how suspected DVT is investigated.[57] If all patients with suspected DVT have ultrasound examination of the calf veins (whole-leg ultrasound), isolated distal DVT accounts for about one-half of all DVT diagnosed.[58] If a diagnostic approach is used that does not include ultrasound examination of the calf veins or that only performs ultrasound examination of the calf [illegible] selected patients, isolated distal DVT is rarely diagnosed.[58]

The primary goal of diagnostic testing for DVT [illegible] identify patients who will benefit from anticoagulant therapy. This does not [illegible] symptomatic DVT need to be identified. Isolated distal DVT do not need to be sought and treated provided [illegible] there is strong evidence that the patient does not have a distal DVT that will extend into the proximal veins (ie, the patient is unlikely to have a distal DVT, and if a distal DVT is present, it is unlikely to extend); (2) if this criterion is not satisfied, a follow-up proximal ultrasound is done after 1 week to detect distal DVT that has extended into the proximal veins, in which case anticoagulant therapy is started; and (3) patients who do not have severe symptoms that would require anticoagulant therapy if the symptoms were due to a distal DVT.

Diagnostic approaches to suspected DVT that do not examine the calf veins use [illegible] combination of clinical assessment, D-dimer testing, single and serial proximal vein ultrasound examination to manage patients) or only examine the calf veins in selected patients (eg, those who cannot have DVT excluded using the previously noted tests) have been proven safe and are presented in Bates et al[57] in the guidelines. If [illegible] ultrasound (usually whole-leg ultrasound) [illegible] isolated distal DVT is diagnosed, there are two management options: (1) treat patients with anticoagulant therapy or (2) do not treat patients with anticoagulant therapy unless extension of the DVT is detected on a follow-up ultrasound examination (eg, after 1 and 2 weeks or sooner if the [illegible] [there is no widely [illegible] protocol for surveillance ultrasound testing] [illegible] natural history studies suggest that when left untreated ~15% of symptomatic distal DVT will extend into the proximal veins and that if extension does not occur within 2 weeks, it is unlikely to occur subsequently.[59,60] The risk of extension of isolated distal DVT will vary among patients (see later discussion).

As noted in Bates et al,[57] these [illegible] diagnostic approaches [illegible] than routine whole-leg ultrasound. If isolated distal DVT is diagnosed, depending on the severity of patient symptoms (the more severe the symptoms, the stronger the indication for anticoagulation) and the risk for thrombus extension (the greater the risk, the stronger the indication for anticoagulation), we suggest either (1) anticoagulation or (2) withholding of anticoagulation while performing surveillance ultrasound examinations to detect thrombus extension. We consider the following to be risk factors for extension: positive D-dimer, thrombosis that is extensive or close to the proximal veins (eg, > 5 cm in length, involves multiple veins, > 7 mm in maximum diameter), no reversible provoking factor for VTE, cancer, history of VTE, and inpatient status.[61-64] Thrombosis that is confined to the muscular veins has a lower risk of extension than true isolated distal DVT.[58] We anticipate that isolated distal DVT detected using a selective approach to whole-leg ultrasound often will satisfy criteria for initial anticoagulation, whereas distal DVT detected by routine whole-leg ultrasound often will not. A high risk for bleeding (Table 2) favors ultrasound surveillance over initial anticoagulation, and the decision to use surveillance or initial anticoagulation is expected to be sensitive to patient preferences. The evidence supporting recommendations to prescribe anticoagulants for [illegible] distal calf DVT is low quality because it is not based on direct comparisons of the two management strategies, and the ability to predict extension of distal DVT is limited.

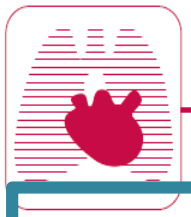
Hospital Treat With Anticoagulants: A single controlled trial of 51 patients with symptomatic isolated distal DVT, all of whom were initially treated with heparin, found that 3 months of VKA therapy prevented DVT extension and recurrent VTE (29% *vs* 0%, $P < .01$).[65] The evidence in support of parenteral anticoagulation and VKA therapy for isolated distal DVT, [illegible] is [illegible] evidence from patients with [illegible] PE that is presented elsewhere in this [illegible] of moderate quality (there is high-quality evidence that anticoagulation is effective, but uncertainty that benefits outweigh risks). There have not been evaluations of alternatives to 3 months of anticoagulation of symptomatic isolated distal DVT, and it is possible that less-aggressive anticoagulation strategies may be adequate. Duration of anticoagulation for isolated distal DVT is discussed in section 3.1.

Recommendations

2.3.1. In patients with acute isolated distal DVT of the [illegible] and without severe symptoms or risk factors for extension (see text), we suggest serial ultrasonography of the deep veins for 2 weeks over initial anticoagulation (Grade 2C).

2.3.2. In patients with acute isolated distal DVT of the leg and severe symptoms or risk factors

ACCP 2012 (no change in 2016 update)



CHEST

CHEST | Volume 141 | Number 2 | FEBRUARY 2012 Supplement

What should we do for Calf DVT?

ANTITHROMBOTIC THERAPY AND PREVENTION OF THROMBOSIS, 9TH ED:
AMERICAN COLLEGE OF CHEST PHYSICIANS EVIDENCE-BASED CLINICAL PRACTICE GUIDELINES

Selective? Why not just scan every calf?

According to the guidelines, *there are a lot of calf DVTs…*

"…Isolated distal DVT accounts for about one-half of all DVTs diagnosed…"

February 2012; 141(2_suppl) Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines.

ACCP Guidelines

"The … goal of *diagnostic testing* for DVT is to identify patients who will benefit from anticoagulant therapy"

"This does not mean that all symptomatic DVT need to be identified"

For example, guidelines state: ?

Controversial

(Don't search for *calf* DVT if)…"the patient does not have ***severe symptoms …"***

Reasonable?

Agree?

I can live with this recommendation…

ACCP Guidelines

"The…goal of *diagnostic testing* for DVT is to identify patients who will benefit from anticoagulant therapy"

"This does not mean that all symptomatic DVTs need to be identified"

For example, guidelines state:

? Confusing

"(Don't search for DVT if)…there is ***strong*** evidence that the patient does not have a *distal DVT* that will extend into the proximal veins…"

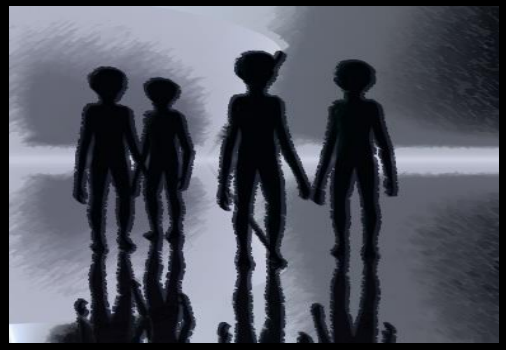
Reasonable? Agree?

ACCP Guidelines

"…There is ***strong evidence*** that the patient does not have a distal DVT that will extend into the proximal veins…"

You can't "prove a negative." Can you…

… Provide *strong evidence* that aliens didn't land in your backyard last night…



… Provide *strong evidence* that your dog can't speak Italian…

… Provide *strong evidence* that the DVT in your calf…won't extend?

ACCP Guidelines

"…There is ***strong evidence*** that the patient does not have a distal DVT that will extend into the proximal veins…"

"We consider the following to be risk factors for extension: …no reversible provoking factor for DVT, active cancer, history of VTE, and inpatient status…"

"…Thrombosis that is extensive or close to the proximal veins…

vs

Thrombosis that is confined to the muscular veins… (which) has a lower risk of extension…"

But how can you know this without scanning the tibial veins?

ACCP Guidelines

Guidelines for Dx of calf DVT are complicated because *guidelines for Rx are* complicated…

"If … isolated distal DVT is diagnosed, there are two management options:

(1) Treat patients with anticoagulant , or

(2) Do not treat patients with anticoagulant… unless extension of the DVT is detected on a follow-up *(proximal)* US examination"

"eg, after 1 and 2 weeks, or sooner if there is concern [there is no widely accepted protocol for surveillance ultrasound testing]"

ACCP Guidelines

Complicated Rx rules / algorithms…

(Use of anticoagulation depends) "…on the severity of symptoms (the more severe, the stronger the indication for anticoagulation)…"

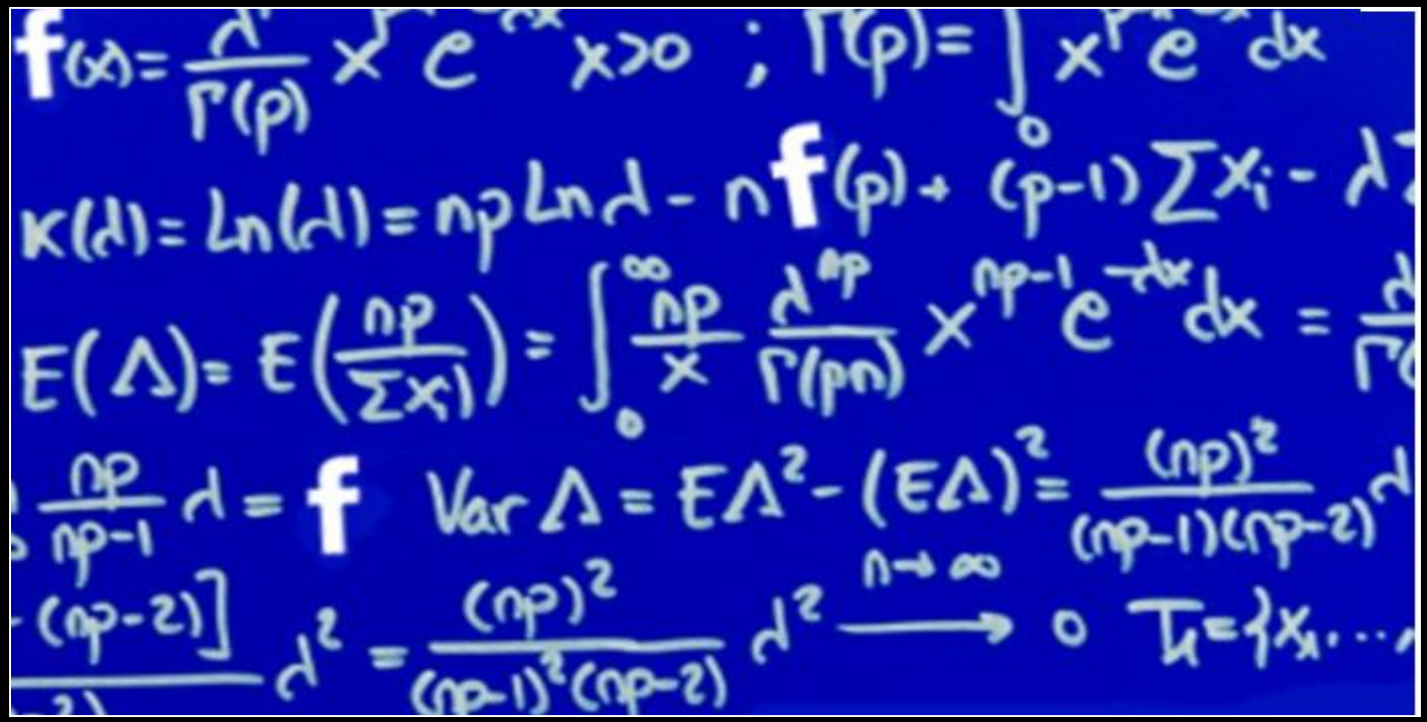
"A high risk for bleeding … favors ultrasound surveillance over initial anticoagulation,

"The decision to use surveillance versus anticoagulation is … sensitive to patient preferences"

ACCP Guidelines

Bottom line…

It’s hard to figure out when / if to look for **calf DVT** based on the ACCP Guidelines



ACCP Guidelines

Circulation

A different approach

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Common sense

Diagnosis of Venous Thromboembolism

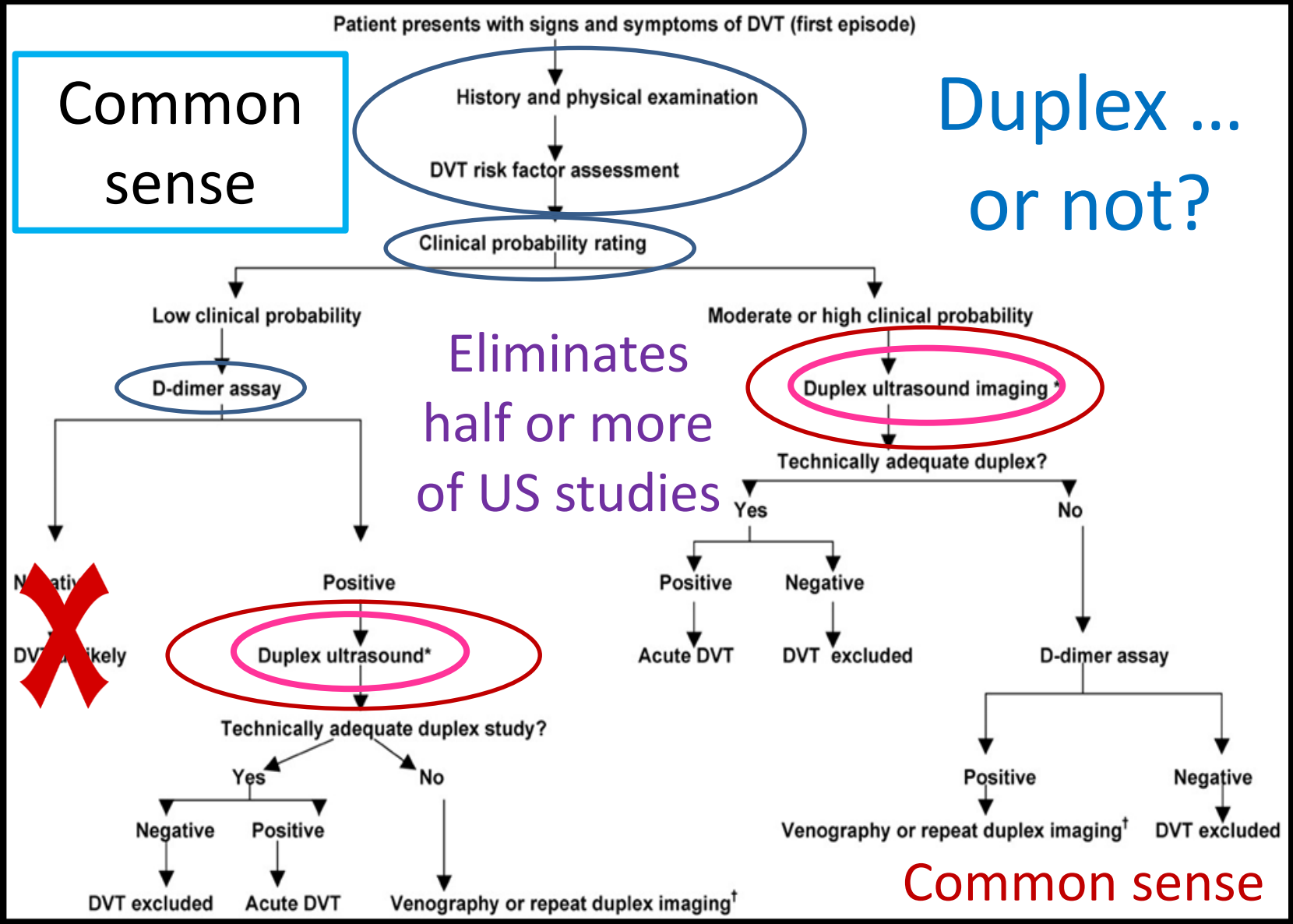
Ultrasonography and Diagnosis of Venous Thromboembolism

Brenda K. Zierler, PhD

"… Alternatives to … duplex evaluation of anyone suspected of DVT are clinical prediction models (eg, Wells) and the measurement of D-dimer…"

Common sense

A seemingly similar proposal…



Common sense

Duplex … or not?

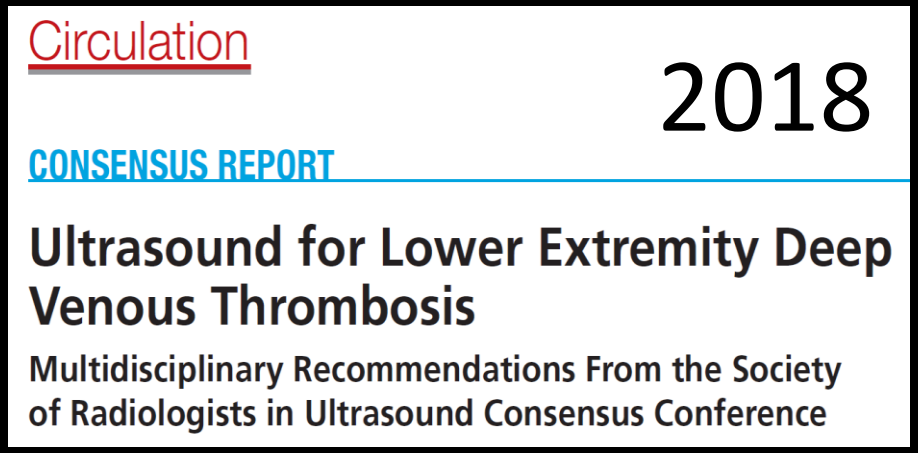
Eliminates half or more of US studies

Common sense

…Image the entire leg (*with tibials*)

"… An initial negative examination that *includes … proximal and calf veins* (is) sufficient to withhold anticoagulation and preclude the need for … follow-up studies…"

Substantially simplifies diagnostic approach



Common sense

Supported by:
Needleman… Meissner!

Patient with *possible calf DVT*

Option #1

ACCP approach

Fight the urge to do an expensive, time-consuming whole-leg (with calf) ultrasound!!

Obtain *proximal* ultrasound. If negative:

- Determine if symptoms (calf) are severe
- Assess all risk factors for clotting
- Review history (eg, bleeding risk, previous thrombosis / previous PE)
- Serial *proximal* ultrasounds (no calf!)

Treat or not?

Perform *calf* ultrasound *only* if symptoms are severe or propagation is likely (?) AND bleeding risk is low AND patient prefers anticoagulation to serial studies

Patient with *possible calf DVT*

Option #2

Common sense approach

History / exam / risk assessment, etc, to determine pre-test likelihood of DVT

If pre-test likelihood low, get D-dimer

If pre-test likelihood is not low (or D-dimer is positive), perform *whole-leg* ultrasound (including tibials)

If ultrasound is negative (including calf), no need for treatment or follow-up

Thomas Paine

The tie-breaker…

IAC Standards

4.6.3B Lower Extremity Venous Duplex for Thrombosis and Patency

4.6.3.1B Transverse gray-scale images without and with transducer compressions (when anatomically possible or not contraindicated)…must include at a minimum:

There's no choice– Calf veins with every US!

i. Common femoral vein
ii. Saph–femoral junction
iii. Proximal femoral vein
iv. Mid-femoral vein
v. Distal femoral vein
vi. Popliteal vein
vii. Posterior tibial veins
viii. Peroneal veins

ix. Additional images to document areas of suspected thrombus, and…

I told you we need to scan for calf DVT …

The End