

DEEP VEIN THROMBOSIS: A STUDY IN CLINICAL DIAGNOSIS

SINGAPORE MED J 1995; Vol 36: 113

Dear Sir,

I refer to the article 'Deep Vein Thrombosis: A Study in Clinical Diagnosis'⁽¹⁾.

I would like to refute the author's contention that "the reliability of ultrasound imaging for the diagnosis of DVT in Tan Tock Seng Hospital (TTSH) is to be questioned. The study.... recommended that the scan be performed by an experienced vascular technologist. Such a person is definitely lacking in our local context."

The use of ultrasound in the investigation of DVT has been increasing world-wide over the past few years. With the better machines and newer technology available in recent years, accuracy studies have reported figures of 88%-100% sensitivity and 94%-100% specificity⁽²⁻⁹⁾. In many centres today, ultrasound is regarded as an acceptable first-line investigation for suspected DVT.

In TTSH, the vascular radiologists have been doing ultrasound for suspected upper and lower limb DVT for the past 2 years. My colleagues and I have done a study (the only local one so far) comparing its accuracy with venography. Our results show sensitivity of 100% and specificity of 91.7%. (We have submitted an article reporting this to the Singapore Medical Journal).

With regards to calf vein thrombosis, I agree that the examination is limited with older machines, as seen in the accuracy rates of approximately 81% quoted in older studies. However, we have found that up-to-date equipment with colour Doppler capability makes the study of calf veins much more

reliable. Our own experience is further supported by 2 recent studies concentrating on calf vein thrombosis, which report sensitivities of 95% and 100% and specificities of 100% and 100% respectively^(10,11).

**Dr Tan Soo See, Susanna
Registrar
Department of Diagnostic Imaging
Tan Tock Seng Hospital**

REFERENCES

1. Ng KC. Deep vein thrombosis: A study in clinical diagnosis. Singapore Med J 1994; 35:286-9.
2. Aitken AGF, Godden DJ. Real-time ultrasound diagnosis of deep vein thrombosis: A comparison with venography. Clin Radiol 1987; 38:309-13.
3. Lensing AW, Pradon P, Brandjes D, Huisman PM, et al. Diagnosis of deep-vein thrombosis by real-time B-mode ultrasonography. N Engl J Med 1989; 320:342-5.
4. Cronan JJ. Venous thromboembolic disease: The role of US. Radiology 1993; 186:619-30.
5. Vogel P, Laing FC, Jeffrey RB, Wing V. Deep venous thrombosis of the lower extremity: US evaluation. Radiology 1987; 163:747-51.
6. Cronan JJ, Dorfman GS, Grusmark J. Lower-extremity deep venous thrombosis: further experience with and refinements of US assessment. Radiology 1988; 168:101-7.
7. White RH, McGahan JP, Daschbach MM, Hartling RP. Diagnosis of deep-vein thrombosis using duplex ultrasound. Ann Intern Med 1989; 111:297-304.
8. Monreal M, Montserrat E, Salvador R, et al. Real-time ultrasound for diagnosis of symptomatic venous thrombosis and for screening of patients at risk: correlation with ascending conventional venography. Angiology 1989; 40:527-33.
9. Habscheid W, Hohmann M, Wilhelm T, Epping J. Real-time ultrasound in the diagnosis of acute deep venous thrombosis of the lower extremity. Angiology 1990; 41:599-608.
10. Bradley MJ, Spencer PJ, Alexander L, Milner GR. Colour flow mapping in the diagnosis of the calf deep vein thrombosis. Clin Radiol 1993; 47:399-402.
11. Baxter GM, Duffy P, Partridge E. Colour flow imaging of calf vein thrombosis. Clin Radiol 1992; 46:198-201.

REPLY FROM AUTHOR

Dear Sir,

The study was conducted in October 1992 in Tan Tock Seng Hospital (TTSH) and the patient who had a doppler ultrasound done was admitted in September 1992. The patient had swelling of the right calf and ankle and the doppler ultrasound did not reveal any thrombosis. From 1990 when studies were evaluating the sensitivity of doppler ultrasound to detect DVT, all 3 patients with isolated calf-vein thrombosis were not picked up in one study⁽¹⁾. Another study also done in 1990 by Fletcher et al found that sensitivity and specificity of ultrasound imaging in diagnosing calf-vein thrombosis was 85% and 83% respectively and this prompted him to recommend that "ultrasound imaging is now the investigation of choice for the diagnosis of DVT provided that the scan is performed by an experienced vascular technologist"⁽²⁾.

Much progress had been made since and a recent study by Bradley et al reported sensitivity and specificity for calf-vein thrombosis at 100% and even suggested that ultrasound could be superior to venography in sensitivity⁽³⁾. However, Cogo et al in comparing compression ultrasonography to doppler ultrasound showed sensitivity of 95% and 76% respectively with doppler

ultrasound giving 2 false positives⁽⁴⁾. This belies the fact that ultrasound is extremely operator dependent and should be done by an experienced vascular technologist. At the time of my study, there was no specific radiologist assigned to do doppler ultrasound for DVT cases which led to my conclusion that "such a person is lacking in our local context.... reliability of ultrasound imaging for the diagnosis of DVT in TTSH is to be questioned".

**Dr Ng Kwan Chung, Kenneth
23 Shelford Road #03-01
Singapore 1128**

REFERENCES

1. Lensing AW, Levi MM, Buller HR, Prandoni P, Vigo M, Agnelli G. Diagnosis of deep vein thrombosis using an objective Doppler method. Ann Intern Med 1990; 130:9-13.
2. Fletcher JP, Kershaw LZ, Barler DS, Kortts J, Varnava A. Ultrasound diagnosis of lower limb deep vein thrombosis. Med J Aust 1990; 122:965-71.
3. Bradley MJ, Spencer PA, Alexander L, Milner GR. Colour flow mapping in the diagnosis of the calf deep vein thrombosis. Clin Radiol 1993; 47:399-402.
4. Cogo A, Lensing AW, Prandoni P, Buller HR, Girolami A, ten-Cate JW. Comparison of real-time B-mode ultrasonography and Doppler ultrasound with contrast venography in the diagnosis of venous thrombosis in symptomatic outpatients. Thromb Haemost 1993; 70:404-7.