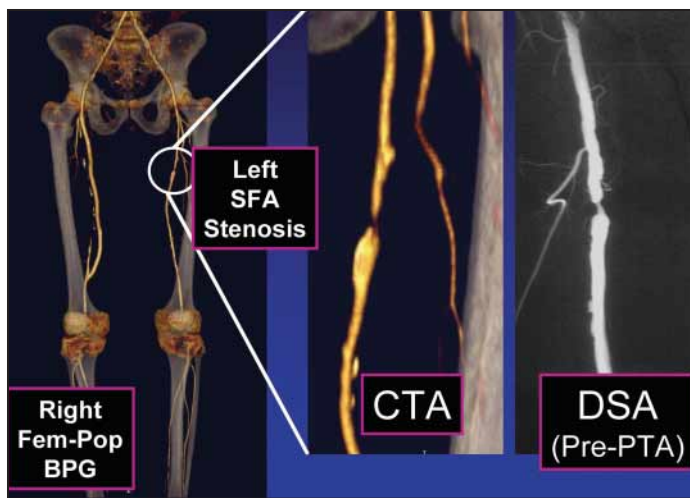


Shown are right femoral-popliteal bypass graft, left superficial femoral artery stenosis, CT angiography, and digital subtraction angiography (prior to percutaneous transluminal angioplasty).



Many Tests Shore Up PAD Diagnosis, Gauge Severity

BY MITCHEL L. ZOLER
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MIAMI BEACH — Several diagnostic tests complement the ankle-brachial index for diagnosing peripheral artery disease in patients with intermittent claudication.

For patients with suspected arterial disease but a normal ankle-brachial index of more than 0.9, segmental limb pressure,

pulse volume recording, and an exercise treadmill test can help refine the diagnosis, Dr. Michael R. Jaff said at the 18th International Symposium on Endovascular Therapy.

Once peripheral artery disease (PAD) is diagnosed, three noninvasive methods can provide anatomic information prior to contrast angiograph: Doppler ultrasound, MR angiography, and CT angiography.

Both pulse volume recording and segmental limb pressure recording help gauge the severity of PAD, and they can localize the site of an occlusion or stenosis. These methods also are useful in patients who have atypical exertional limb symptoms. But like ankle-brachial index, they're less reliable in patients with calcified arteries, they can't distinguish between stenosis and occlusion, and severe inflow disease makes infrainguinal lesions hard to identify. Pulse volume recording is well suited to track changes in the severity of PAD. Sequential limb pressures are obtained by using a panel of pressure cuffs placed on the thigh, calf, ankle, and foot as well as on the arm, said Dr. Jaff, director of the vascular diagnostic laboratory at Massachusetts General Hospital in Boston.

Patients with atypical exertional symptoms are good candidates for assessment by a treadmill test. A treadmill test also is useful for measuring the functional impact of peripheral artery disease, evaluating the impact of treatment, and unmasking occult angina or coronary disease. The standard treadmill protocol for suspected peripheral artery disease is a maximum of 5 minutes walking at 2 miles per hour on a simulated 12% grade. This requires a programmable treadmill.

For anatomic information, Doppler ultrasound is notable as a relatively inexpensive test compared with MR and CT. It's also painless and risk free, and can both predict the ideal access for intervention and assess the adequacy of revascularization therapy over time.

MR angiography is fast and gives excellent visualization of the entire arterial tree as well as soft tissue and solid organs. The contrast used is not iodine based and there is no radiation exposure. A recently published comparison of MR angiography and Doppler ultrasound in 61 consecutive patients showed that MR angiography had a higher positive predictive value than did Doppler ultrasound for assessing vascular anatomy. MR angiography can't be used in patients with cardiac defibrillators or pacemakers, it's hard to use in patients who are claustrophobic or very obese, and it tends to overestimate the severity of stenoses, said Dr. Jaff.

CT angiography is even faster than MR, and provides high resolution images of the entire arterial tree, as well as soft tissue and solid organs. But it uses iodinated contrast, and requires significant radiation exposure and prolonged breath holding by the patient. In addition, calcification obscures vascular lumens, and correlation of the images with contrast angiography has not been established.

Excessive **ES** Sleepiness

Hypersomnolence: A Multidimensional Impact on Life

By definition, hypersomnolence (excessive sleepiness, or ES) consists of unintended periods of drowsiness or sleepiness that occur during desired waking periods.¹ ES is associated with narcolepsy, obstructive sleep apnea (OSA), and shift work sleep disorder (SWSD), and it can also be caused by multiple sclerosis, Parkinson's disease, mood disorders, and many other neurological and psychological disorders.¹ Regardless of the cause, ES can impact life in ways that merit further consideration.

Job performance reexamined

True ES symptoms should be differentiated from fatigue, tiredness, and lack of motivation, all of which may be perceived by employers as laziness.² Patients with untreated OSA, narcolepsy, or other disorders with ES are more likely to be involved in work-related accidents than the general public, and to incur higher healthcare-related costs.³

Driving while impaired

The effects of ES do not end with the workday. ES can adversely affect concentration, so it is not surprising that the risk of auto accidents is higher in people who experience ES, such as shift workers and people with undiagnosed sleep disorders.⁴ The drive home after a full workday can be the most hazardous part of the day for a patient with ES.

Family and social consequences

ES can impair a patient's spousal or family relationships, too. The consequences of chronic ES may include mild to severe fatigue, crankiness, and home accidents.⁵ Poor motor, mental, and cognitive function at home can significantly impact a patient's quality of life.⁶

ES and cognitive performance

Patients may experience symptoms of "executive dysfunction" accompanying excessive sleepiness, including impaired verbal fluency, serial learning deficits, problems focusing attention, and concentration difficulties.³ Similarly, degree of sleepiness has been correlated with results of psychomotor vigilance task (PVT) studies.⁷ Other PVT research confirms that sleep loss and alcohol consumption have a comparable negative effect on psychomotor performance.⁸

Lapses in cognitive efficiency as a result of ES can also be evaluated using the Cognitive Drug Research (CDR) System, which was developed to assess both enhancement and impairment of human cognitive performance in a clinical trial setting.^{9,10} In one such use, the CDR System indicated that attention and memory suffered as a result of working long hours in a surgical unit without sleep.¹¹

Wakefulness when wakefulness matters

Importantly, ES is often symptomatic of an underlying condition that merits attention, rather than the result of deficiencies in the quality or quantity of an individual's sleep. Therefore, identification and treatment of the underlying condition are critical priorities. Once the underlying condition has been managed, the clinician may choose to continue to evaluate the effects of ES with the Epworth Sleepiness Scale (ESS), which measures the likelihood of dozing during 8 commonly encountered daytime situations.¹² Once the impact of excessive sleepiness is understood, the clinician can begin to focus on managing ES by extending wakefulness throughout the day.

For more information about managing ES in your clinical practice, please visit www.ExcessiveSleepiness.com.

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