

# DVT Often Implicated in Pulmonary Embolism

*Keep in mind the role of the lower-extremity venous system as the prime source of pulmonary embolism.*

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NICE, FRANCE — When pulmonary embolism is suspected, clinicians also should be looking for thromboembolic disease in the venous system, Dr. Christian J. Herold said at the annual meeting of the Cardiovascular and Interventional Radiological Society of Europe.

"In my experience, there is limited awareness regarding the role of the lower extremity venous system as the prime source of pulmonary embolism," said Dr. Herold, a radiologist at the University of Vienna Medical Center. Pulmonary embolism and deep venous thrombosis are components of the same thromboembolic disease complex, Dr. Herold stressed. He said as many as 70% of patients with proven pulmonary embolism also have proximal deep vein thrombosis.

Dr. Herold said the probability of pulmonary embolism should be assessed for every patient where the condition is suspected. Imaging studies must be done in every patient with a moderate to high

probability of pulmonary embolism.

"Diagnosis is very important because mortality is very high in undiagnosed and untreated patients," he warned, putting the death rate in these patients at 10%-30% and emphasizing that the first week can be critical. "Unfortunately ... many patients go unrecognized."

Clinicians at his institution last year examined 4,250 patients for venous thromboembolic disease, he reported. The process relies heavily on CT and an easy to follow algorithm that is taught to medical residents at the hospital.

He said alternative diagnoses should be considered since ruling out pulmonary embolism does not mean the patient is disease free. In one study, he noted, 70% of patients with suspicion of pulmonary embolism did not have pulmonary embolism.

"Many had alternative diagnoses, and CT provides you this information," Dr. Herold advised, adding that "CT has evolved into an unofficial gold standard for analyzing pulmonary arteries." He urged that CT angiography and CT venography both be used when venous disease is suspected. "There is information in the body

that you can retrieve using the same examination, the same bolus," he said.

His group does CT venography 3 minutes after the pulmonary artery exam. "We prefer to do discontinuous slices with 3- to 4-cm gaps," he said. "In my experience we don't miss clots with this technique."

According to the medical literature, he added, CT venography has a sensitivity of 95%-100% and specificity of 97%-100%. He said studies in more than 5,300 patients

have shown CT angiography to have a negative predictive value of 99%-100%, and that, therefore, it can be used to rule out the need for treatment.

He cautioned, however, that some patients are exceptions to the rule. "All those guidelines and rules do not really account for 100% of patients. You may have individualized exceptions. And each patient has to be treated as an individual," Dr. Herold advised. ■

## Embolism Diagnosis: Keep It Simple

Many combinations of tests have been promoted as ideal algorithms for diagnosing pulmonary embolisms, Dr. Herold said.

Most are too complex. He urged institutions to develop their own simple approaches. As an example, he offered these guidelines:

- ▶ All patients with intermediate or high clinical probability (independent from any other clinical or laboratory result) must be imaged.
- ▶ Clinical symptoms determine the region to be imaged.
- ▶ No further imaging is required to institute treatment in a patient whose

primary examination is positive.

▶ If the patient has a moderate or high clinical probability for pulmonary embolism and the primary imaging exam is negative, assess the complementary region with CT angiography, CT venography, and ultrasound.

▶ If the patient has a low clinical probability of pulmonary embolism, D-dimer tests can help determine whether imaging is necessary.

Dr. Herold noted that most algorithms involve CT angiography, D-dimer testing, and ultrasound; lung ventilation-perfusion scanning and pulmonary angiography are rarely used.

## Combination Can Shorten Treatment Time for DVT

NICE, FRANCE — Adding AngioJet percutaneous mechanical thrombectomy to catheter-directed urokinase thrombolysis can shorten treatment time and reduce lytic doses by close to half, Dr. Hyun S. Kim reported at the annual meeting of the Cardiovascular and Interventional Radiological Society of Europe.

Comparing clinical outcomes in patients treated with the combination with outcomes in those treated with thrombolysis alone, he said the dual-therapy patients fared "similarly, if not slightly better" in a small single-institution study.

Dr. Kim, a radiologist at Johns Hopkins University, Baltimore, and his coinvestigators compared the two approaches in consecutive patients with upper and lower extremity thromboses. The population had a mean age of 44.3 years.

Clinicians used urokinase therapy alone to treat 35 limbs in 31 patients, 11 of whom were men. A total of 20 patients, including 10 males, underwent urokinase therapy and thrombectomy for treatment of 26 limbs.

The mean duration of therapy was 26.4 hours with the combination therapy vs. 48.1 hours with urokinase therapy alone. Mean lytic dose also was much less with the combined treatment: 2.7 million units vs. 5.8 million units with urokinase alone. Both differences were statistically significant.

Dr. Kim reported achieving complete clot lysis in 80.8% (21/26) of limbs treat-

ed with the combination. The remaining 19.2% (5/26) had partial lysis. None of these patients had persistent thrombosis.

Among the group treated only with urokinase therapy, 74.3% (26/35) of limbs achieved complete clot lysis, and 11.4% (4/35) had partial lysis. Thrombosis persisted in 14.3% (5/35).

Dr. Kim reported no patient in either group had major bleeding. No recurrences or worsening of clotting had occurred at 30 days of follow-up.

Deep vein thrombosis is the third most common cardiovascular disease in the United States, according to Dr. Kim. "Despite multiple studies, percutaneous treatments have not as yet been established as the standard of care in the United States," he said.

By combining percutaneous and urokinase therapies, his group addressed three reasons why clinicians are "adamant" about not using percutaneous treatments. Dr. Kim said clinicians argue that "(1) the treatment may take too long, and because of the long duration of therapy, there is (2) potential for hemorrhage." The third reason, he said, is the high cost of treatment compared with therapy with warfarin or heparin.

In his conclusion, Dr. Kim predicted a role for percutaneous mechanical thrombectomy because the combination produced "better results than catheter-directed urokinase thrombolysis alone." ■

## Depression Tied to Functional Problems In Peripheral Vascular Disease Patients

SANTA ANA PUEBLO, N.M. — Peripheral vascular disease patients may be at increased risk for functional impairment in association with depression, Dr. Edward Norris said at the annual meeting of the Academy of Psychosomatic Medicine.

He and his colleagues found depressive symptoms in one-third of 66 peripheral vascular disease patients recruited for screening from the Lowering of Vascular Atherosclerotic Risk (LOVAR) study at the Lehigh Valley Hospital and Health Network in Allentown, Pa.

The depressed patients appeared to have poorer quality of life, said Dr. Norris, vice chair of research and education in the psychiatry department at Pennsylvania State University. "As you became more depressed, your quality of life was significantly worse," he said, reviewing scores on the Medical Outcomes Short Form Survey (SF-36).

Compared with peripheral vascular disease patients who were not depressed, the 22 patients with symptoms of depression had significantly lower scores on subscales for physical functioning, physical role, emotional role, general health, vitality, social functioning, and mental health. Only bodily pain was not significantly worse in patients with depressive symptoms.

Depression is known to be associated with other forms of cardiovascular disease, but Dr. Norris said he believes this is the first study to examine the association between depression and functional status in patients with peripheral vascular disease.

The nonrandomized LOVAR study, a 5-year, prospective, cohort-controlled trial, is

evaluating atherosclerosis in 513 patients, aged 39-79, with cerebral, cardiac, or peripheral vascular disease. Patients were enrolled within 6 months of a nondisabling vascular event and had at least two modifiable risk factors for myocardial infarction, stroke, or peripheral vascular disease.

Dr. Norris' group used the 21-item Beck Depression Inventory (BDI) to measure symptoms of depression in the subgroup of 66 patients with peripheral vascular disease. The 22 patients with symptoms of depression had a mean BDI score of 15.45, signaling mild to moderate depression. The other 44 patients scored a mean score of 4.34 (normal range). Patients in both groups were about 63 years old on average. Analysis of 18 risk variables, including age, marital status, employment, exercise, smoking, alcohol consumption, body mass index, and hypertension, showed no depression-related differences in demographic factors.

Myocardial infarction, stroke, transient ischemic attacks, and death occurred in about 23% of the depressed patients and in about 7% of those who were not depressed, but that trend did not achieve statistical significance. "Does depression in peripheral vascular disease affect morbidity and mortality?" he asked, calling for prospective studies of peripheral vascular disease and depression and of the effects treating depression could have on peripheral vascular disease.

Dr. Norris said in an interview that the results suggest a need to pay closer attention to peripheral vascular disease and that his group has started follow-up studies. ■