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820 Jorie Blvd
Oak Brook, IL 60523
TEL 1-630-571-2670
FAX 1-630-571-7837
RSNA.org

NEWS

RSNA Press Release

New Therapy Effectively Treats Deep Vein Thrombosis

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Media Contacts:

RSNA Media Relations: (630) 590-7762

Maureen Morley
(630) 590-7754
mmorley@rsna.org

Linda Brooks
1-630-590-7738
lbrooks@rsna.org

At A Glance

- Researchers at the National Institutes of Health have developed an effective treatment for deep vein thrombosis.
- Deep vein thrombosis is a serious health problem in which blood clots form in the deep veins and can break off and travel to the lungs.
- Using a clot-busting agent called alteplase, the researchers were able to dissolve the clots and reduce the risk of recurrence or complications.

OAK BROOK, Ill. - A novel treatment for blood clots in the legs appears to be safe and effective, according to a pilot study published in the February issue of Radiology. The study found that injecting or "lacing" the clot with a fiber-binding thrombolytic agent effectively treats deep vein thrombosis (DVT) and reduces the risk of subsequent recurrence or bleeding.

"This treatment regimen is able to clear blood clots rapidly and safely, restoring blood flow in the veins of the lower leg, and the results are durable," said lead author Richard Chang, M.D., chief of the interventional radiology section of the Department of Radiology, Clinical Center, National Institutes of Health (NIH), Bethesda, Md.

DVT is a common and serious health problem in which a blood clot, or thrombus, form in the deep veins, particularly in the lower leg or thigh. Complications occur when the clot breaks off and travels to the lungs, resulting in pulmonary embolism, a potentially fatal condition.

Most patients with DVT are treated solely with anticoagulation therapy (blood thinners) and compression stockings. However, studies have shown that one-third of these patients will suffer from post-thrombotic syndrome, characterized by pain, swelling, or in severe cases by changes in skin color or skin ulceration. Another third are likely to have another clot or pulmonary embolism within five years of their initial DVT.

Treatments with thrombolytic (clot-dissolving) therapy could potentially protect against these occurrences, but can pose a bleeding risk. Therefore, Dr. Chang and colleagues sought to develop a safe, effective and affordable thrombolytic treatment regimen for DVT.

Twenty patients with acute DVT were treated with direct intraclot lacing of the thrombus with a clot-dissolving agent called alteplase and full systemic anticoagulation. Alteplase binds to the clot, so the procedure does not require continuous infusion of the drug, as do some thrombolytic therapies. With this treatment, after lacing one vein segment with

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alteplase, the interventional radiologist can immediately direct catheters to treat other vein segments to ensure that the entire clot has been adequately treated.

The results of the study showed that blood flow was restored throughout the deep venous system in 16 (80 percent) of the 20 patients during therapy with complete resolution of symptoms in 18 patients (90 percent) after six months of anticoagulation. Alteplase was cleared from the patients' circulatory system within two hours of treatment, reducing the risk of subsequent bleeding.

There were no serious complications or bleeding during the treatment, and no cases of post-thrombotic syndrome or recurrent clotting during follow-up of 3.4 years.

"With this therapy, pain and swelling resolve rapidly, and, in most cases, the patient is able to resume all normal activity within a week," said the study's co-author, McDonald K. Horne III, M.D., from the hematology section of the Department of Lab Medicine, Clinical Center, NIH.

The authors caution that larger clinical trials are required to further support the efficacy of this promising treatment.

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"Deep Vein Thrombosis of the Lower Extremity: Direct Intraclot Injection of Alteplase Once Daily with Systemic Anticoagulation—Results of a Pilot Study." Collaborating with Drs. Chang and Horne were Clara C. Chen, M.D., Anthony Kam, M.D., Ph.D., Edie Mao, M.B., and Thomas H. Shawker, M.D.

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