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NEWS

RSNA Press Release

New Index Measures Risk of Death from Blood Clot

Released: March 2, 2004

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At A Glance

- A new index has been developed to determine mortality risk in cases of pulmonary embolism (PE).
- Patients with blood clots that rank 60% or greater on the CTPE index are at increased risk of death and may require aggressive therapy.
- Each year, there are approximately 600,000 new cases of PE and 50,000 deaths from PE in the U.S.

OAK BROOK, Ill. - Predicting the mortality of patients with pulmonary emboli (blood clots in the lung) may become possible with a newly developed clot-volume ranking index, according to a study appearing in the March issue of the journal *Radiology*.

"We found that the amount of clot present is predictive of patient outcome," said study coauthor, John A. Pezzullo, M.D., assistant professor of diagnostic imaging at Brown University in Providence, R.I. "Consequently, patients with a high clot volume have a poor prognosis."

Quantification of clot size with the pulmonary arterial obstruction index, called the CTPE Index, allows physicians to triage pulmonary embolism (PE) patients based on risk. This is the first attempt to relate the clot volume, or burden, to the clinical outcome. Little consideration has previously been given to the implication of clot load on therapy.

The researchers used the CTPE Index to retrospectively evaluate multi-detector row computed tomography (MDCT) studies of 59 patients with PE to determine if a correlation exists between pulmonary embolus volume and survival. They found that patients with a clot burden of 60 percent (scoring 24 points out of 40) or greater, as determined by the CTPE Index, are at increased risk of death and may require aggressive treatment such as catheter-directed thrombolysis or thrombolytic therapy in intensive care.

Five of the six patients (83 percent) with large clots indicated by a CTPE Index of 60 percent or greater died, while all but one of the 53 patients (98 percent) with a CTPE Index of less than 60 percent survived.

PE is a serious medical issue in the United States, with approximately 600,000 new cases diagnosed annually and nearly 50,000 deaths yearly, according to Dr. Pezzullo.

"In the future, emergency department patients with pulmonary embolism will be stratified by risk based on how large the clot burden is," Dr. Pezzullo said. "Patients who have very

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high clot burdens may be treated more aggressively than patients with minimal burdens."

CT pulmonary angiography, a noninvasive test that allows high resolution imaging of lung vessels, is replacing conventional pulmonary angiography as a first line exam for detecting pulmonary emboli. Studies show CT to be more cost effective than the more invasive conventional angiography in the work-up of suspected lung blood clots.

The researchers note that this is a preliminary study and larger trials need to be developed to validate the results.

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"CT Pulmonary Angiography: Quantification of Pulmonary Embolus As a Predictor of Patient Outcome — Initial Experience." Collaborating with Dr. Pezzullo on this study were Andrew S. Wu, B.A., John J. Cronan, M.D., David D. Hou, M.D., and William W. Mayo-Smith, M.D.

Radiology is a monthly scientific journal devoted to clinical radiology and allied sciences. The journal is edited by Anthony V. Proto, M.D., School of Medicine, Virginia Commonwealth University, Richmond, Virginia. *Radiology* is owned and published by the Radiological Society of North America Inc. (http://radiology.rsna.org)

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