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NEWS

RSNA Press Release

Researchers Use CT to Predict Heart Disease

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At A Glance

- Radiologists have developed a prediction model using incidental CT findings to help predict future heart attacks or other cardiovascular events.
- Incidental findings are unexpectedly detected imaging characteristics unrelated to the indication for CT.
- Calcifications on the aortic wall were found to be the most predictive of future cardiovascular events.

OAK BROOK, Ill. – Using incidental findings from routine diagnostic CT, radiologists may be better able to identify people at high risk for cardiovascular disease, according to a new study appearing online and in the November issue of *Radiology*.

"The results of this study show that radiologists can predict cardiovascular disease fairly well using incidental findings of calcifications of the aortic wall on CT, along with minimal patient information, such as age, gender and the reason for the CT," said the study's lead author, Martijn J. A. Gondrie, M.D., from the Julius Center for Health Sciences and Primary Care at the University Medical Center Utrecht in the Netherlands. "Ultimately, this easily executed extra risk stratification has the potential to reduce future heart attacks or other cardiovascular events."

Over the past 10 years, the use of chest CT has increased substantially, and CT image quality has dramatically improved. As a result, many more incidental findings occur. Incidental findings are unexpectedly detected imaging characteristics that are unrelated to the original clinical indication for the CT.

Dr. Gondrie's study is part of the Prognostic Value of Ancillary Information in Diagnostic Imaging (PROVIDI) project, which aims to investigate the relevance of unexpectedly detected imaging findings on chest CT.

"This is the first study to investigate whether incidental findings can predict future disease in a routine care setting," Dr. Gondrie said. "Incidental findings are obtained without additional radiation exposure or cost to the patient and may hold valuable clues as to the patient's overall health and their risk for future disease."

Dr. Gondrie and colleagues developed prediction models incorporating incidental aortic findings detected on chest CT. From a total of 6,975 patients who had undergone diagnostic, contrast-enhanced chest CT for non-cardiovascular indications, a representative sample of

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817 patients, plus 347 patients who experienced a cardiovascular event during a mean follow-up period of 17 months, were included in the study. Scores were assigned for incidental aortic abnormalities found on CT, including calcifications, plaques, elongation and other irregularities. Other factors taken into account included the patient's age, gender, and CT indication.

While each aortic abnormality was highly predictive, the prediction model incorporating the sum score for aortic calcifications was most indicative of future cardiovascular events.

"PROVIDI is the first study of its scale and scope that seeks to investigate the potential of incidental findings to predict future disease and thus identify patients at risk," Dr. Gondrie said. "It generates the much-needed insights that allow more effective utilization of the increasing amount of diagnostic information, and it could potentially change the way radiologists contribute to the efficiency of daily patient care."

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"Cardiovascular Disease: Prediction with Ancillary Aortic Findings on chest CT Scans in Routine Practice." Collaborating with Dr. Gondrie were Willem P. T. M. Mali, M.D., Ph.D., Peter C. Jacobs, M.D., Ph.D., Ay L. Oen, M.D., and Yolanda van der Graaf, M.D., Ph.D., for the PROVIDI Study Group.

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