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NEWS

RSNA Press Release

RSNA Presents Alexander R. Margulis Award to Studies of Contrast Materials

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CHICAGO – Today the Radiological Society of North America (RSNA) presented the 2013 Alexander R. Margulis Award for Scientific Excellence to two articles, "Contrast Material-induced Nephrotoxicity and Intravenous Low-Osmolality Iodinated Contrast Material" and "Intravenous Contrast Material-induced Nephropathy: Causal or Coincident Phenomenon?" published in the April 2013 issue of *Radiology*.

Named for Alexander R. Margulis, M.D., a distinguished investigator and inspiring visionary in the science of radiology, this annual award established in 2012 recognizes the best original scientific article published in a particular year in RSNA's peer-reviewed journal *Radiology*. The Margulis Award Nominating Committee and the Margulis Award Selection Committee review published manuscripts based on their novelty, quality, importance, and potential scientific and clinical impacts.

The lead authors of this year's selected articles are Matthew S. Davenport, M.D., from the Department of Radiology, University of Michigan Health System, in Ann Arbor, and Robert J. McDonald, M.D., Ph.D., from the Department of Radiology at the Mayo Clinic in Rochester, Minn. Their articles were selected for the Margulis Award because of the importance of establishing a scientifically valid understanding of the role, if any, of iodinated contrast agents in the diminished renal function that may be observed following computed tomography (CT) exams involving intravenous contrast agents.

These articles, employing novel methods of establishing legitimate control groups, examine and question the long-held but unproven beliefs on the development of contrast-induced nephropathy. They show that the risk, if any, of kidney injury following contrast agent administration is far less than has been previously suggested.

Dr. Davenport and colleagues, starting with a group of nearly 430,000 CT examinations, identified more than 20,000 patients, half of whom had undergone contrast medium–enhanced scanning and half of whom had undergone non-enhanced scanning, with exact propensity score matching. They found that patients with creatinine levels of less than

1.5 mg/dL before CT were not at risk for nephropathy. As creatinine levels before CT increased, the risk of nephropathy after CT increased for both groups. Although a number of other risk factors helped to predict renal dysfunction after contrast medium administration, contrast medium administration remained an independent risk factor for patients whose creatinine values before contrast medium administration were equal to or higher than 1.6 mg/dL. The risk increased as creatinine levels before contrast medium administration increased.

Dr. McDonald and colleagues performed a retrospective analysis involving more than 157,000 scans obtained from 53,000 patients. They divided contrast medium-receiving patients and non-contrast medium-receiving controls into low-, medium- and high-risk groups, performed propensity score adjustment by using several techniques to compare groups, and performed counterfactual analysis in which a subgroup of patients each of whom had contrast-enhanced and non-enhanced scans acted as their own controls. They concluded that intravenous administration of contrast medium was associated with no increased risk of nephrotoxicity, and that it may not pose any threat to renal function, even in patients with preexisting renal insufficiency.

Both the Nominating Committee and the Selection Committee deemed these two articles, though they drew somewhat different conclusions, exemplary co-recipients of the 2013 Alexander R. Margulis Award.

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"Contrast Material–induced Nephrotoxicity and Intravenous Low-Osmolality Iodinated Contrast Material." Matthew S. Davenport, M.D., Shokoufeh Khalatbari, M.S., Jonathan R. Dillman, M.D., Richard H. Cohan, M.D., Elaine M. Caoili, M.S., M.D., and James H. Ellis, M.D.

"Intravenous Contrast Material–induced Nephropathy: Causal or Coincident Phenomenon?" Robert J. McDonald, M.D., Ph.D., Jennifer S. McDonald, Ph.D., John P. Bida, Ph.D., Rickey E. Carter, Ph.D., Chad J. Fleming, M.D., Sanjay Misra, M.D., Eric E. Williamson, M.D., and David F. Kallmes, M.D.

Note: Copies of RSNA 2013 news releases and electronic images will be available online at *RSNA.org/press13* beginning Monday, Dec. 2.

RSNA is an association of more than 53,000 radiologists, radiation oncologists, medical physicists and related scientists, promoting excellence in patient care and health care delivery through education, research and technologic innovation. The Society is based in Oak Brook, Ill. (*RSNA.org*)