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NEWS

RSNA Press Release

Benefits of CT Outweigh Cancer Risks in Young Adults

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At A Glance

- Underlying medical conditions facing young adults who undergo CT exams represent a significantly greater health risk than that of radiation-induced cancer from CT.
- The research team analyzed imaging records of 22,000 patients 18 to 35 years old who underwent a chest or abdominopelvic CT between 2003 and 2007.
- The most common reasons for exam were trauma and cancer for chest CT and abdominal pain and trauma and cancer for abdominopelvic CT.

OAK BROOK, Ill. — The underlying medical conditions facing young adults who undergo computed tomography (CT) exams represent a significantly greater health risk than that of radiation-induced cancer from CT, according to a new study published online in the journal *Radiology*.

CT utilization has grown approximately 10 percent annually over the last 15 years in the U.S., raising fears of an increase in radiation-induced cancers. However, discussions of radiation-induced cancer risk often fail to take into account the condition of the patients being imaged, according to Susanna Lee, M.D., Ph.D., chief of women's imaging at Massachusetts General Hospital and assistant professor of radiology at Harvard Medical School in Boston.

"The impetus for our study was the concern that the lay press often focuses on potential harm caused to patients by CT imaging," Dr. Lee said. "Lacking in this discussion is a sense of how sick these patients already are."

To better understand the risks and benefits of CT in young adults, the research team lead by Dr. Lee and researcher Robert L. Zondervan, M.S., analyzed imaging records of patients 18 to 35 years old who underwent chest or abdominopelvic CT exams between 2003 and 2007 at one of three university-affiliated hospitals in Boston. Children and young adults are more susceptible to ionizing radiation and more likely to live for the approximately 10 to 20 years considered necessary to develop a radiation-induced malignancy.

Susanna Lee, M.D., Ph.D.

The researchers had access to records from 22,000 patients,

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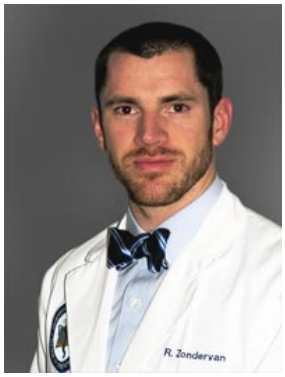
including 16,851 chest and 24,112 abdominopelvic CT scans. During the average 5.5-year follow-up period, 7.1 percent of young adults who underwent chest CT and 3.9 percent of those who had abdominopelvic CT died: figures that were much greater than the 0.1 percent long-term risk of death from radiation-induced cancer predicted by statistical models in both groups.

"It was a bit surprising to see how high the five-year mortality rate was in this group," Dr. Lee said. "To put it in context, the average young adult has only a 1 percent chance of dying in the next five years."

The most common reasons for exam were trauma and cancer for chest CT and abdominal pain and trauma and cancer for abdominopelvic CT. While many of the patients who underwent CT were cancer patients with a bleak prognosis, Dr. Lee pointed out that the major differences in risk were evident in the other groups who had CT, such as those suffering from trauma, abdominal pain and difficulty breathing.



Robert L. Zondervan, M.S.

"When we subtracted out cancer patients from the data set, the risk of death in the study group ranged from 2.5 to 5 percent—still well above the risk in the general population," she said.

Dr. Lee and colleagues also found that the patients who were scanned only one or two times represented the overwhelming proportion of exams.

"This finding shows that radiation reduction efforts should also focus on patients who are very rarely scanned, and not just those who are scanned repeatedly," Dr. Lee said.

Dr. Lee noted that the study group was imaged between 2003 and 2007, before radiation dose awareness and reduction programs like Image Wisely and Image Gently took effect. She said that the risk of radiation-induced cancer from CT likely would be lower today, making the difference in mortality even more pronounced.

"We're not saying be complacent about the radiation risk from CT," Dr. Lee added. "But these people being imaged might have been in a motor vehicle accident, or have a perforated appendix or life-threatening cancer, and we're trying to gain information from scans that can help them. That's the part that gets lost in the debate."

# # #

"Body CT Scanning in Young Adults: Examination Indications, Patient Outcomes, and Risk of Radiation-induced Cancer." Collaborating with Dr. Lee and Robert L. Zondervan were Peter F. Hahn, M.D., Ph.D., Cheryl A. Sadow, M.D., and Bob Liu, Ph.D.

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