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NEWS

RSNA Press Release

Radiation Exposure of Pregnant Women More than Doubles in 10 Years

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At A Glance

- Today pregnant women are undergoing more radiologic exams than they did 10 years ago.
- The use of CT on pregnant women has increased 25 percent per year over the past decade.
- CT exposes the fetus to higher doses of radiation compared to other imaging exams.

CHICAGO — The past decade has seen an unprecedented increase in the use of radiologic exams on pregnant women, according to a study presented today at the annual meeting of the Radiological Society of North America (RSNA).

"Through medical imaging examinations, we are exposing pregnant women to twice the amount of radiation as we did 10 years ago," said Elizabeth Lazarus, M.D., assistant professor of diagnostic imaging at the Warren Alpert School of Medicine at Brown University in Providence, R.I. "Overall, the levels of radiation to which we are exposing pregnant women are low, but they do carry a slight risk of harm to the developing fetus."

The researchers conducted a retrospective review of selected imaging examinations - nuclear medicine, computed tomography (CT) and plain-film x-rays - performed at Brown to determine how often these imaging exams were utilized in pregnant women and the estimated resulting radiation dose to the fetus. Data were compiled for the years 1997 through 2006 and compared to the number of infant deliveries per year.

The investigators found that from 1997 to 2006, the number of imaging studies performed on pregnant women increased by 121 percent. The greatest increases were in the number of CT exams, which deliver more radiation than many other radiologic procedures. An abdominal CT exposes the patient to a radiation amount more than twice that of an x-ray of the lower gastrointestinal tract. An abdominal ultrasound exposes the patient to no ionizing radiation.

CT is not routinely used in pregnancy, but pregnant women may undergo CT to detect suspected life-threatening conditions such as bleeding in the brain, blood clots in the lungs or appendicitis. Since CT exposes the developing fetus to radiation, concerns are often raised regarding overuse. The majority of CT examinations (approximately 75 percent) analyzed in the study were performed in areas of the mother's body separate from the uterus, so the fetus was not exposed to any direct radiation. Even low levels of radiation have been shown to carry a small risk of harm to a developing fetus.

"While performing CT exams during pregnancy is still uncommon, we found that pregnant women are being recommended for CT more often over the last 10 years," Dr. Lazarus said.

The researchers evaluated 5,235 examinations on 3,249 patients. During the 10 years of the study, the number of patients imaged per year increased from 231 to 447, and the number of exams per year increased from 325 to 730. This represented an 89 percent increase in patients and a 121 percent increase in examinations over the course of the study. During the same 10 years, the number of deliveries only increased from 8,661 to 9,261, a rise of only 7 percent or less than 1 percent annually.

Use of plain-film x-rays increased an average of 7 percent per year, and the number of nuclear medicine examinations rose by approximately 12 percent annually. CT examinations increased by approximately 25 percent per year. The average estimated fetal radiation exposure for CT was 0.69 rads, compared to 0.04 rads for nuclear medicine and 0.0015 rads for plain-film x-rays.

Other studies have shown that use of high-tech modalities, such as CT and magnetic resonance imaging (MRI), has increased in all patient populations throughout the United States. According to Dr. Lazarus, some of this increase is due to the development of new imaging techniques to better diagnose abnormalities, and some is due to motivation by hospitals and insurers to make fast diagnoses to shorten hospital stays and improve patient care.

Dr. Lazarus cautions healthcare consumers to be aware of this trend. "I want to assure patients that CT can be a safe, effective test for pregnant patients," she said. "However, there are alternatives that should at least be explored. Pregnant patients should ask their doctors about other imaging or diagnostic tests that may not expose the fetus to radiation."

Co-authors are C. Debenedectis, M.D., W. Mayo-Smith, M.D., and Patricia Spencer, M.D.

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