

Cancer Risk from Radiation Exposure From CT Scans



According to a study of seven U.S. healthcare systems, the use of computed tomography (CT) scans of the head, abdomen/pelvis, chest or spine, in children younger than age 14 more than doubled from 1996 to 2005, and this associated radiation is projected to potentially increase the risk of radiation-induced cancer in these children in the future, according to a study published Online First by JAMA Pediatrics.

The use of CT in paediatrics has increased over the last two decades. The ionising radiation doses delivered by the tests are higher than conventional radiography and are in ranges that have been linked to an increased risk of cancer. Children are more sensitive to radiation-induced carcinogenesis and have many years of life left for cancer to develop, the authors write in the study background.

"The increased use of CT in paediatrics, combined with the wide variability in radiation doses, has resulted in many children receiving a high-dose examination," the study notes.

Diana L. Miglioretti, Ph.D., of the Group Health Research Institute and University of California, Davis, and colleagues quantified trends in the use of CT in paediatrics plus the associated radiation exposure and estimated potential cancer risk using data from seven U.S. health care systems.

The authors note the use of CT doubled for children younger than 5 years old and tripled for children 5 to 14 years of age between 1996 and 2005 before remaining stable between 2006 and 2007 and then beginning to decline.

The projected lifetime attributable risks of solid cancer were higher for younger patients and girls than for older patients and boy. The risks were also higher for patients who underwent CT scans of the abdomen/pelvis or spine than for patients who underwent other types of CT scans, according to the results.

The estimates also suggest that for girls, a radiation-induced solid cancer is projected to potentially result from every 300 to 390 abdomen/pelvis scans, 330 to 480 chest scans, and 270 to 800 spine scans, depending on age. The potential risk of leukaemia was highest from head scans for children younger than 5 years of age at a rate of 1.9 cases per 10,000CT scans, the results show.

The authors estimate that 4,870 future cancers could be caused by the 4 million paediatric CT scans performed each year. Based on their calculations, the authors also suggest that reducing the highest 25 percent of doses to the median (midpoint) may prevent 43 percent of these cancers.

"More research is urgently needed to determine when CT in paediatrics can lead to improved health outcomes and whether other imaging methods (or no imaging) could be as effective. For now, it is important for both the referring physician and the radiologist to consider whether the risks of CT exceed the diagnostic value it provides over other tests, based on current evidence," the study concludes.

Reference:

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