Radiation and CT Scans

A recent study published in *The Lancet* suggests increased risk of brain tumor and leukemia in children who have repeated CT scans. Every year, more than 4 million children undergo these diagnostic tests. What does the new data mean for your patients and your practice?

**WHAT ARE THE HIGHLIGHTS OF THE STUDY?**

In the study, investigators reported that, for children under 15 years old, undergoing two to three CT scans (delivering doses of 50 to 60 mGy) might triple the risk of leukemia or brain tumors. This translates roughly to one excess case of leukemia and one excess brain tumor per 10,000 children undergoing CT scans.

**WHAT DOES THIS MEAN FOR PATIENTS?**

While this investigation adds to growing literature about the potential risks of medical radiation, there are aspects of this study that can be debated. The benefits of a CT scan, when indicated and performed appropriately, far outweigh the potential risks. It is immensely valuable and has been recognized as one of the most significant innovations of modern medicine. CT scans can be lifesaving and offer many benefits for the diagnosis and management of childhood injuries and disorders. For
example, a brain CT is commonly performed for head injuries. Multiple studies using clinical decision rules have concluded that the benefit of these scans for detecting brain injury occurs in at least 2 percent of children. This benefit is more than 200 times greater than the proposed increased risk of a brain tumor cited in the newly published study.

ARE ALL CT SCANS THE SAME?

No. For many years, Riley at IU Health has used a low-dose CT scan technique. By following new research and using the most advanced technology, Riley at IU Health has decreased low-dose body CT radiation by an additional 30 percent while maintaining image quality. Our hospital is one of the very few sites in the country that use sophisticated automated techniques to tailor CT scan settings according to the body habitus and size. Our CT scan doses are markedly lower than those that were used to calculate cancer risk in the Lancet study.

WHAT IF I AM NOT SURE IF I SHOULD ORDER A CT SCAN?

For many indications, CT scans are the preferred imaging modality. It has the advantage of having good contrast and spatial resolution. Compared to other studies such as MRI, CT scans are so quick that sedation is usually not required. CT scans are the best imaging to evaluate for head, spine and body trauma. It is the best imaging modality to evaluate for lungs and many of the abdomen pathologies. However, some conditions can be diagnosed with other tests. For example, appendicitis can be diagnosed using ultrasound.

At Riley at IU Health, the pediatric radiologists review every request for a CT scan and, when appropriate, advise the referring physician to perform an alternate study that uses non-ionizing radiation.

For questions about the study and appropriate use of CT scans, call 317.948.6315 and ask to speak with the staff radiologist.


CLICK HERE FOR PAST ISSUES OF RILEY SPEAKS