



On CT-Related Radiation, Linking TIA and Major Stroke, Ruptured Renal Artery Aneurism, and Three-View Abdominal Radiographs

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Each month, Dr. Nahum Kovalski reviews a handful of abstracts from, or relevant to, urgent care practices and practitioners. For the full reports, go to the source cited under each title.

NEJM Article Blames CT-Related Radiation for Up to 2% of Cancers in U.S.

Key point: The growth of medical CT utilization may be responsible for 1.5% to 2% of cancer cases in the U.S.

Citation: Brenner DJ, Hall EJ. *N Engl J Med.* 2007;357:2277-2284.

A *New England Journal of Medicine* review article published recently targets the cancer risks of CT at the same time that hundreds of scientific presentations and new products at the 2007 Radiological Society of North America meeting are fueling multislice CT's continued growth.

There has been a rapid growth of CT utilization—from 3 million procedures in 1980 to 62 million per year in the mid-2000s.

It was stated that the growth of medical CT utilization may be responsible for 1.5% to 2% of cancer cases in the U.S. The estimate is that perhaps 20 million adults and more than 1 million children per year in the U.S. are irradiated unnecessarily from medical CT.

The authors of the *NEJM* article express concern about the growing popularity of CT for presurgical diagnosis of appendicitis in children, for example, because diagnostic ultrasound, a modality that involves no ionizing radiation, is probably equally effective for the same procedure. They cite estimates indicating that between 6% and 11% of CT studies are performed on children.



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Screening is also an important motivation for increased CT use in asymptomatic adults, according to the authors. They predict that future utilization growth will be fueled by virtual CT colonoscopy, CT lung cancer screening, cardiac screening, and whole-body screening.

The authors recommend better equipment and techniques to lower radiation exposure and the alternative use of MRI and ultrasound, especially for infants and children.

They also urge physicians to avoid inappropriate CT utilization. It is presumed that about one-third of diagnostic imaging is medically unnecessary. Many radiologists agree that inappropriate CT scans are performed because of medicolegal concerns and exploitation by profit-driven referring physicians and commercial imaging providers. ■

TIA Linked to Substantial Risk for Major Stroke Within a Week

Key point: Further evidence that a TIA constitutes a medical emergency and requires immediate management.

Citation: Giles MF, Rothwell PM. *Lancet Neurol.* Published online November 12, 2007.

New research suggests that patients who experience a transient ischemic attack (TIA) are at substantial increased risk of having a major stroke within one week, a finding that researchers say warrants treating TIA as a medical emergency; specifically, the risk for major stroke after a TIA is 5.2% at seven days and 3.2% at two days.

This is the first meta-analysis to examine stroke risk in the early period after TIA. Results from previous individual studies that have looked at this issue yielded inconsistent results. To gain a reliable estimation of early stroke risk, the inves-

tigators identified all studies examining stroke risk within seven days of a TIA. This amounted to a total of 18 cohort studies, all of which had been published since 2000, and included 10,126 patients who had a TIA.

Of note is the fact that the lowest risk for subsequent stroke was seen in studies in which subjects received emergency treatment in a specialist stroke service, whereas the highest risk was seen in population-based studies in which individuals did not receive urgent treatment.

Seven-Day Stroke Risk After TIA by Treatment Type

Setting/Treatment	Patients with Subsequent Stroke (%)
Nonurgent	11
Urgent	0.9

The Early Use of Existing Preventive Strategies for Stroke study and the SOS-TIA study from researchers at Bichat-Claude Bernard University Hospital and Denis Diderot University and Medical School in Paris were published in *The Lancet* and *The Lancet Neurology*, respectively, in October 2007.

However, despite this growing evidence that early, aggressive management of TIA significantly reduces major stroke risk, national audits reveal that management of TIA in the United Kingdom is “patchy” and ranges from full-immediate emergency inpatient treatment and monitoring for up to seven days to significant delays in initial assessment of two days or more. [Published in *Medscape Medical News* November 12, 2007—Caroline Cassels.] ■

Rupture of Renal Artery Aneurysm into the Renal Pelvis, Clinically Mimicking Renal Colic: Diagnosis with Multidetector CT

Key point: Older patients with “classic” renal colic have a higher likelihood of critical alternate diagnoses that must be ruled out.

Citation: De Wilde V, Devue K, Vandenbroucke F, et al. *British J Radiology*. 2007;80: e262-e264.

The authors report on a 60-year-old man, seen at the emergency department because of severe left flank pain. Clinical diagnosis was that of renal colic. Overnight, he became hemodynamically unstable and hematuria became massive, so multidetector CT (MDCT) was performed.

Rupture of a renal artery aneurysm into the left pelvis was seen on coronal reconstructed CT images. Nephrectomy was performed.

Rupture of a renal artery aneurysm into the pelvis is un-

usual and death is likely if diagnosis and treatment are delayed. The initial clinical presentation may be very similar to renal colic. MDCT allows timely and correct diagnosis of this unusual condition. ■

Test Characteristics of the Three-View Abdominal Radiograph Series in the Diagnosis of Intussusception

Key point: Air in the ascending colon on two or three abdominal films substantially decreases the likelihood of intussusception.

Citation: Roskind CG, Ruzal-Shapiro CB, Dowd EK, et al. *Pediatr Emerg Care*. 23(11):785-789.

The authors performed a single-center retrospective review of children for whom supine, prone, and lateral decubitus abdominal radiographs were done as part of our standard diagnostic evaluation for intussusception. The criterion evaluated was whether air was visualized in the ascending colon on each of the three radiograph views.

The authors analyzed 179 patients, of whom 27 (15.1%) were diagnosed with intussusception.

"Air in the ascending colon on 2 or 3 abdominal radiograph views has the potential to substantially decrease the likelihood of or exclude intussusception."

The test characteristics of the three-view radiograph series in the diagnosis of intussusception when all three views had air in the ascending colon were sensitivity of 100%, specificity of 18.4%, likelihood ratio for a negative test of 0, and negative predictive value (NPV) of 100%.

When at least two views had air in the ascending colon, the test characteristics were sensitivity of 96.3%, specificity of 41.4%, likelihood ratio for a negative test of 0.09, and NPV of 98.4.

Using specific criteria, the presence of air in the ascending colon on two or three abdominal radiograph views has the potential to substantially decrease the likelihood of or exclude intussusception. ■