



MRI Detects More Ischemic Strokes than CT

In news that's a boon for stroke specialists and their patients but a potential headache for hospital administrators and medical insurers, new research finds that acute ischemic stroke patients would be better served by an MRI rather than CT scan in the emergency room, according to a NINDS study published in the January 27th issue of *The Lancet*. Both imaging modalities were used within two hours of each other (median difference: 34 minutes) on 304 consecutive patients, of a total 356 studied, with suspected stroke. All patients in the prospective study were evaluated at the NIH Stroke Center at Suburban Hospital in Bethesda, MD.

The researchers found that non-con-

trast MRI is roughly five times more sensitive than, and twice as accurate as, immediate non-contrast CT in diagnosing ischemic stroke: MRI's diagnostic sensitivity was 83 percent versus just 26 percent for CT. In the 90 patients who presented within the three-hour tPA treatment window, MRI detected ischemic stroke in 46 percent while CT scan detected seven percent.

"Although CT scanning has been the criterion that is standard for diagnosis of acute stroke," the authors wrote, "our study shows that use of CT is no longer justifiable on the basis of diagnostic accuracy alone." Both imaging techniques were comparable in their ability to detect acute

intracranial hemorrhage, the study found.

Increased use of MRI in emergent cases could allow for greater use of tPA, but financial and logistical problems relating to access to the technology—as well as patient unsuitability due to claustrophobia, anxiety, or the presence of a pacemaker—may undermine widespread use of MRI in ER settings.

To improve facility and insurer acceptance, the authors recommended a study comparing the cost effectiveness of MRI vs. CT to see if MRI's greater diagnostic accuracy might allow for better patient outcomes and therefore reduce costs generated by hospitalization, rehabilitation and long-term disability. **PN**

SHORT TAKES

■ **¿Habla usted dos idiomas? It's Good For Your Memory.** Canadian researchers have found evidence that lifelong use of two languages can help delay the onset of dementia symptoms by four years. The study, published in the February 2007 issue of *Neuropsychologia*, examined diagnostic records of 184 patients reporting cognitive complaints between 2002 and 2005, of which 91 were monolingual and 93 were bilingual. Researchers found that 132 patients met criteria for probable Alzheimer's disease; the remaining 52 were diagnosed with other dementias. The mean age of onset of dementia symptoms in the monolingual group was 71.4 years vs. 75.5 years in the bilingual group. This difference remained even after considering the possible effect of cultural differences, immigration, formal education, employment and even gender as influences in the results.

The authors suggest their findings are consistent with evidence that lifestyle factors such as physical activity, education and social engagement help build "cognitive reserve" (*i.e.*, enhanced neural plasticity, compensatory use of alternative brain re-

gions, and enriched brain vasculature) later in life.

■ **Do Epilepsy Patients Have a Sixth Sense?** Some patients with epilepsy can reliably predict when they are likely to have a seizure, a finding that may lead to better seizure prevention, according to a study published in the January 23rd issue of *Neurology*. To determine how accurate patient predictions were, researchers examined 71 patients who had at least one seizure during the past year but not more than one per day. Patients were asked to keep a daily log in which they predicted how likely they were to experience a seizure in the coming 24 hours. Fifty-seven patients experienced seizures during the study. Of these patients, the study found they correctly predicted about 32 percent of their seizures and 83 percent of their seizure-free days.

■ **All In The Family...Sort of.** Family members with multiple sclerosis are likely to share onset age, but not disease severity. These new findings have important implications for counseling patients, according to a study published in the January 30th issue of *Neurology*. To address the question of family influence on the course of the disease, researchers examined data on 2310 individuals from over 1000 families in which at

least two members had multiple sclerosis. They examined age at onset, disability, disease severity and other features of the disease.

■ **Migraine Profiles Remain Stable.** The epidemiologic profile of migraine has remained stable in the US during the last 15 years, according to a study in the January 30th issue of *Neurology*. The study found that "more than one in four migraineurs are candidates for preventive therapy, and a substantial proportion of those who might benefit from prevention do not receive it." The authors studied 162,576 individuals 12 years or older and found the one-year period prevalence for migraine was 11.7 percent (17.1 percent in women and 5.6 percent in men). Prevalence peaked in middle life and was found to be lower in adolescents and those older than age 60 years. Of all migraine sufferers, 31.3 percent had an attack frequency of three or more per month, and 53.7 percent said they had severe impairment or the need for bed rest. In total, 25.7 percent met criteria for "offer prevention," and prevention should be considered in an additional 13.1 percent. Only 13 percent reported current use of daily preventive migraine medication.

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MS and Alzheimer's Prevalence on the Rise

A new study finds that rates of multiple sclerosis and Alzheimer's disease are on the rise, while traumatic brain injuries have decreased. The report, published in the January 30th issue of *Neurology*, sought to update the prevalence and incidence figures for the most common neurological disorders in the United States. The study discovered that nearly one out of 1000 people have multiple sclerosis. "Our estimate of MS prevalence is about 50 percent higher than a comprehensive review from 1982. Whether this reflects improvements in diagnosis or whether incidence is actually increasing deserves further study," said study author Deborah Hirtz, MD, with the National Institutes of Neurological Disorders and Stroke. The rate of Alzheimer's disease was also up substantially from the past estimate, with the study finding that 67 out of 1000 elderly Americans suffering from Alzheimer's disease.

"Current projections of Alzheimer's disease suggest that there will be about 10 million cases in the United States in 2050, of which six million are expected to have moderate or severe dementia," wrote Steven Albert of the Department of Behavioral and Community Health Sciences at the University of Pittsburgh in a commentary in the journal.

The study also found that 101 out of every 100,000 Americans suffer traumatic brain injury each year—a 50 percent drop compared to the prior estimate. The authors point to more restrictive hospital admission criteria as a reason for the decrease, but improvements in motor vehicle safety may have also had an effect.

In addition, the study found:

- 183 out of every 100,000 people suffer a stroke each year, and one in 100 has had a stroke at some point in their lives.
- Nearly one out of 100 elderly Americans have Parkinson's disease. The

study found PD prevalence will nearly double from about 4.3 million people today to 9 million people worldwide over the next 25 years.

- Nearly four out of every 100,000 Americans have ALS.
- The median annual incidence of epilepsy is 48 per 100,000; median prevalence based on Class I data is 3.9 per 1000.
- Nearly five out of every 100,000 Americans suffer a new-onset spinal cord injury each year.
- As for childhood neurologic disorders, the study discovered that nearly six out of every 1000 children have autism, and two out of 1000 have cerebral palsy.

This review looked at literature published between 1990 and 2005, which pre-

sented a wide range of estimates for some diseases. For some disorders, the best available data were from western Europe, which was then extrapolated to the US population. The authors concluded that more high-quality studies of the United States population are needed.

"Current, accurate estimates of the numbers of people affected by neurological disorders are needed to understand the burden of these conditions on patients, families, and society, to plan and carry out research on their causes and treatment, and to provide adequate services to people who suffer from these illnesses," said Dr. Hirtz, who is also a member of the Quality Standards Subcommittee of the American Academy of Neurology. **PN**

SHORT TAKES

(Continued from p. 4)

■ **The New Electric Kool-Aid Acid Test.**

A new study has identified the long-elusive neural and signaling mechanisms responsible for unique effects of hallucinogens, published in the February 1st issue of *Neuron*. Researchers have long known that hallucinogens activate 5-HT_{2A} receptors that are normally triggered by serotonin. However, a fundamental mystery has been why other compounds that activate the same receptors are not hallucinogenic. Using mouse models, researchers compared the differences between the effects of LSD and a nonhallucinogenic chemical that also activates 5-HT_{2A} receptors. They determined hallucinogenic effects by measuring a head twitch response that mice characteristically show when under hallucinogens but not when under nonhallucinogens. Being able to selectively affect receptors may allow for development of anti-psychotic drugs that offer fewer adverse effects, the authors speculate.

■ **I'll Take That...Oh, You Already Knew.** It's a retailer's dream come true:

Looking into a shopper's brain and predicting whether or not they will be inclined to buy a particular item. A study in the January 4th issue of *Neuron* has discovered a portion of the nucleus accumbens will light up on fMRI when a shopper sees something they want to purchase. If that price is too high for their liking, however, the insula will activate and the mesial prefrontal cortex will deactivate. Using these activations and deactivations, the report's authors were able to predict whether or not the shoppers would purchase something before they were conscience of making a decision.

■ **The Big Sleep.** Inhaled anesthetics commonly used in surgery are more likely to cause aggregation of amyloid plaques in the brain than intravenous anesthetics, according to a journal article published in the January 23rd issue of *Biochemistry* in which nuclear magnetic resonance spectroscopy was used to assess the aggregation of amyloid beta peptide. "Anesthetics may play a role by causing amyloid peptides to clump together—something that is thought to signal the advancement of Alzheimer's disease," the authors wrote.