

Study finds cell phones could cause noncancerous tumors

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People who have used cell phones for at least 10 years might have an increased risk of developing a rare brain tumor, according to a study published Wednesday in the international journal *Epidemiology*.

A team of researchers at Institute of Environmental Medicine at the Karolinska Institute in Stockholm, Sweden, found almost a fourfold increase of the tumors, known as acoustic neuromas, on the side of the head where the phone was most often held.

The work was done as part of the World Health Organization's cell phone research agenda, and experts in the field said it must be taken seriously and is likely to rekindle consumer worries about the risks of using the phones.

"The Karolinska researchers are respected around the world, and this study will force health agencies to take a fresh look at mobile phone risks," said Louis Slesin, publisher of *Microwave News*, who has been covering the industry since its early days. "This study should put an end to the industry's call to stop mobile phone health research."

At least one past study conducted for the cell phone industry also had suggested a link between the phones and this type of tumor. But cell phone industry officials on Wednesday said the Swedish research is only one study and that no conclusions can be drawn from it.

The study, involving 150 acoustic neuroma patients and 600 healthy people, is one of at least six studies of possible links between cell phone use and acoustic neuromas. Most of those studies had fewer long-term users than the Karolinska study.

Acoustic neuromas are slow-growing noncancerous tumors that develop on a nerve linking the brain and the inner ear. The most common first symptom is hearing loss, but as the tumor grows it can push against brain tissue. If not treated, it can be life threatening. Such tumors are very rare, occurring in about one person per 100,000 in the general population.

"It's a natural place to look [for a problem] because this is the area of the head that is exposed," said Anders Ahlbom, director of the Institute of Environmental Medicine at the Karolinska Institute in Stockholm. When a cell phone is in use, it emits radio-frequency radiation, some of which is absorbed in areas of the head closest to the handset.

To conduct the three-year study, the Karolinska researchers interviewed people who had developed the tumors -- asking about their cell phone use, how many different phones they had used, the makes and models, duration of calls, whether they used a hands-free set and on which side of the head they held the phone.

Researchers said they found no association between the tumors and the amount of use measured in hours or cumulative number of calls, but rather on the length of time those in the study had been regular users of cell phones. Regular use was defined as an average of at least once a week during six months or more.

Ahlbom said in a phone interview that the data are strong and statistically significant, but the findings must be confirmed by follow-up studies. He said the mechanism by which cell-phone radiation might cause tumors remains unknown.

Dr. David Savitz, chairman of the department of epidemiology at the University of North Carolina School of Public Health, Chapel Hill, said the new findings "suggest something a little bit troublesome."

"It is significant in the sense that it is the first well-designed study to show this," Savitz said. "There was an earlier study that came out, but it didn't have as many people with long-term use."

Dr. Henry Lai, research professor of bioengineering at the University of Washington in Seattle, also said the Karolinska study is not the first to show a link between cell phones and acoustic neuromas.

"Another Swedish researcher, Dr. [Lennart] Hardell found similar results in 2002," Lai said, "so this is, in effect, a replication. I think the data are quite solid and are cause for concern on long-term cell phone use."

Lai's own research found DNA breaks in the brain cells of animals exposed to radio-frequency radiation, results that were first published in 1994, and have been repeated by others, he said.

"We looked at DNA damage in animals, not in humans, and found that cell phone radiation can damage DNA," he said. The body's immune system has the ability to repair DNA breaks, but sometimes it can make a mistake and cause a mutation, which could be the first step toward cancer, Lai said.

Sam Milham of Olympia, Wash., an epidemiologist and pioneer in studying the effects of electromagnetic radiation on humans, said it usually takes 20 years or more for solid tumors to develop.

"I'm actually astonished that they found anything like this early," Milham said. "If that energy can do that to normal nerve tissue cells, what can it do to adjacent brain cells? I think it's the tip of a big iceberg, and the peak could be at 25 years past exposure."

"What's really alarming is that in the last five years an enormous number of people started using cell phones, including kids, so I think this is just the beginning of it. I hope I'm wrong."

According to the Cellular Telecommunications and Internet Association's Web site, updated daily, there are more than 170 million wireless subscribers in the United States.

The safety of cell phones was first called into question by the death of a Florida woman, Susan Reynard of Madeira Beach, from a brain tumor. In January 1993, the South Florida Sun-Sentinel published a story about a lawsuit filed by her husband, David, alleging that the cellular phone he bought her while she was pregnant caused or accelerated the growth of the tumor that killed her. The case was later dismissed for lack of scientific evidence.

At the time the suit was filed, the cell phone industry association, the CTIA, said thousands of studies had been done showing the phones were safe, but then was not able to provide any. The industry pledged to spend \$25 million on research to prove the phones are safe.

At least three federal agencies -- the Food and Drug Administration, the Federal Communications Commission, and the Environmental Protection Agency -- have roles in regulating radio-frequency radiation, but only recently has the federal government committed funds to studying the cell phone issue. Those studies are not expected to be completed for five to seven years.

Dr. George Carlo, an epidemiologist then working at George Washington University School of Medicine, coordinated the industry- supported project, which began in the mid-1990s. When the money ran out in 2000, Carlo said, more research was needed because one study showed the risk of acoustic neuroma was 50 percent higher in people who used cell phones for six years or more, and that there appeared to be a correlation between brain tumors on the right side of the head and the use of the phones on that side.

Carlo could not be reached on Wednesday, but the CTIA issued a statement on the Karolinska findings.

"This is just one study on this particular subject and no conclusions can be drawn from it," said spokesman John Walls. "The wireless industry agrees that more research is needed in this area to provide definitive answers to any questions that might still exist. Numerous independent scientific bodies have conducted research on possible health effects from using wireless phones and it is widely accepted that no conclusive link can be made."

Mays Swicord, director of electromagnetic energy research at Motorola in Plantation, one of the world's largest manufacturers of wireless products, said the Karolinska study has to be taken in context alongside 1,300 other peer-reviewed publications on radio frequency radiation and health. No consistent evidence has been observed for an increased risk of cancer, he said.

Swicord said the Swedish study findings eventually will be pooled with similar studies under way in 12 other countries as part of the so-called INTERPHONE study, an international collaboration coordinated by WHO's International Agency for Research on Cancer.