European Study Reports No Brain Tumor Risk Among Young Cell Phone Users

Once Again, the Results Are Confusing

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Here's the golden rule for all cell phone cancer studies: Nothing comes easy.

The first study to look at brain tumors among children and teenagers who have used cell phones came out today and it shows no increased risk. Well, actually, the study, known as CEFALO, does indicate a higher risk —the problem is that it found a higher risk for all the kids who used a phone more than once a week for six months, regardless of how much time they spent on the phone. Because the risk does not go up with more use, the CEFALO team argues that the results argue against a true association.

“The pattern of results looks to me as though there isn’t a causal relationship in term of increased risk with long-term use,” Martin Röösli told *Microwave News.* Röösli, of the Swiss Tropical and Public Health Institute at the University of Basel, ran the Swiss component of CEFALO. The other participating countries are Denmark, Norway and Sweden. The results were posted today on the Web site of the *Journal of the National Cancer Institute (JNCI)*.

The higher risks seen in CEFALO among 7 to 19 year olds are the opposite of those seen in last year's Interphone study. Interphone showed a systematic *lower* risk among all users of cell phones, except for those who were the most highly exposed. Practically no one believes that the protective effect of cell phones seen in Interphone is real. Yet, some observers are not willing to discount the elevated risks seen in CEFALO.

“It’s hard to believe studies that give you such bizarre results,” said Sam Milham. “CEFALO does not have a random distribution of odds ratios [ORs]. If anything, it tells me that there might be a cancer risk.” Milham, the epidemiologist who first linked

occupational exposures to EMFs to leukemia some 30 years ago, is the author of *Dirty Electricity.*

“The Interphone study was unusual in having ORs that were largely less than one and the CEFALO study is unusual in the large number of ORs exceeding one,” said Robert Tarone of the International Epidemiology Institute (IEI) in an e-mail to *Microwave News.* “These findings are peculiar, but they certainly don't support a causal relationship.” Tarone, together with John Boice, wrote an editorial that accompanies the CEFALO paper in *JNCI.* Both Tarone and Boice are alumni of the National Cancer Institute.

“Consistent with virtually all studies of adults exposed to [RF radiation], no convincing evidence was found [in CEFALO] that children who use cell phones are at higher risk of developing a brain tumor,” Boice and Tarone state in their editorial.

Joel Moskowitz of the University of California Berkeley School of Public Health sees it differently. “CEFALO makes for compelling evidence of an increased risk,” he said. Moskowitz points out that the study fell short of the planned number of subjects: Instead of 550 cases of children with brain tumors, there are only 352. "Had they ended up with the desired number of cases, it is highly likely that the results would have been statistically significant,” he said.

Röösli readily concedes that it's difficult to interpret the study findings. “I struggled when I saw the results,” he said. “We talked a lot about it within the CEFALO study group, and we asked whether it's an indication of an association or a systematic problem, or is it just chance?” In the end, Röösli became convinced that it was unlikely that the elevated odds ratios are indicative of a real risk. “There is something going on, but honestly I think it’s a systematic error or chance,” he said. What Röösli finds most convincing is the fact that the overall incidence of brain tumors has not been spiking up. (He cites the incidence rate in Sweden, between 1990 and 2008, reproduced in Figure 1 of the paper.) “Plausibility is very important in epidemiology,” he said. “We must ask whether the results are plausible given what is going on in the world. We may not be able to prove that the data are wrong but we can show from the incidence data that, if such a risk were true, the rates would have increased. So something must be wrong.”

Röösli and Tarone say that at least one clear lesson has been learned from CEFALO and Interphone: There is no point doing any more retrospective case-control studies. “If I knew five years ago what I know now, I would not have started this study,” Röösli said. “Prospective studies would make more sense.”

“In my opinion, the peculiar patterns of results of both [CEFALO and Interphone] provide support to a growing consensus that the possible association between brain cancer and cell phone use cannot be reliably studied using case-control studies,” said Tarone. He added that the CEFALO results are “reassuring” but that “continued vigilance is necessary.”

Here are some of the other results in CEFALO that are not easily explained:

• Why is Norway the only country for which the kids had an OR of less than 1? (see Table 3)
• Why did the control subjects "unexpectedly" *overestimate* their use of the phones much more than the cases? (For instance, cases overestimated the duration of their calls by 52% on average and controls by 163%. See the paper on possible sources of error by the CEFALO group, published in the July issue of *Bioelectromagnetics*.)
• Why is the OR for astrocytomas and other gliomas quite a bit lower than for other types of brain tumors? (see Table 3)
• Why are the risks generally higher on the side of the head *opposite* to the one the phone was used (contralateral)? (see Table 5)
• Why are the risks for tumors in the center of the brain or for those of unknown location much lower than those on either side? (see Table 5)

The results of the next major study on cell phone tumor risks to children —from the Mobi-Kids project— are a long way off. Threre are two more years of field work to complete, said Elisabeth Cardis, the project leader.

The paper will appear in the August 17th issue of *JNCI*.

See also this additional comment in our Short Takes column.

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