EC FP6
Coordination Action

EFFECTS OF THE EXPOSURE TO ELECTROMAGNETIC FIELDS: FROM SCIENCE TO PUBLIC HEALTH AND SAFER WORKPLACE

European Fast Response Team on EMF and Health

COMMENTS ON THE STUDY BY HARDELL ET AL.: POOLED ANALYSIS OF TWO CASE-CONTROL STUDIES ON USE OF CELLULAR AND CORDLESS TELEPHONES AND THE RISK FOR MALIGNANT BRAIN TUMOURS DIAGNOSED IN 1997-2003. INT ARCH OCCUP ENVIRON HEALTH 2006, MARCH 16; [EPUB AHEAD OF PRINT]

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General remarks

This study is an analysis of pooled data from two previously published studies by the same group; one published in 2002 and the other in 2005. The pooled data includes 905 cases of malignant brain tumours, and 2,162 controls. The authors report a 70% increased risk of malignant brain tumours 5-10 years after first use a digital mobile phone, and almost a 200% risk increase after 10 years. Analogue mobile phone use was associated with more than a doubling of the brain tumour risk after 10 years. They also report a higher risk in subjects that started to use a digital mobile phone before the age of 20. In analyses of cumulative hours of mobile phone use, the authors observe a four to six-fold increase of risk of malignant brain tumours after more than 2,000 hours of mobile phone use. Risk increases were also reported in relation to the use of cordless phones. Exposure assessment was based on a mailed questionnaire. In addition, cases and controls were interviewed over the phone to verify exposure report. Exposures lasting less than one year were disregarded; otherwise, there were no requirements of any specific amount of use needed to be regarded as a mobile phone user.

The results of the pooled study by Hardell et al. differ from most previously published studies, including the recently published studies with large numbers of long-term users: a British study published in 2006 included 966 cases of glioma and found no risk increase regardless of time since start of mobile phone use or cumulative number of hours of use. Similar results were reported in a Swedish and Danish study, although these studies were based on smaller numbers of subjects. A German study reported a non-significant increased risk of glioma in long-term mobile phone users but based on only 12 exposed cases. The British and Swedish studies found a slight risk increase on the same side of the head as the phone was used, but a corresponding risk reduction on the opposite side, which indicated that these findings probably are affected by recall bias when reporting usual side of use.

Specific comments

1. The authors give no rationale for how cut-points have been chosen for analyses of cumulative hours of use; e.g. the two upper categories in analyses of digital phone use consist of only 1.5% and 0.5% of the controls, respectively. It is customary to choose cut-points a priori based on the exposure distribution among controls.
2. The extreme categories used for cumulative mobile phone use may be more prone to reporting bias, particularly for high-grade tumours where recall validity in particular might be a problem.
3. Of the two pooled studies, increased risks were found primarily in the second study published in 2005, where significantly increased risks were found also within five years of use of a digital phone.
4. Evidence from other studies speaks strongly against an increased risk of malignant brain tumours after periods of mobile phone use limited to some years. For longer use, of the order of 10 years or more, data are still sparse and conflicting. When published, the Interphone study will add additional information.

European Commission Activities

European Commission funded under FP5 the research project INTERPHONE. This is an international collaborative case-control study based on a common core protocol. The study was designed as a multi-national study to ensure sufficient statistical power to assess whether radiofrequency radiation emitted by mobile telephones increases the incidence of tumours in the head and neck. The first results of the international analyses of INTERPHONE data should be published during 2006, and epidemiological conclusions about possible cancer risks from mobile telephones cannot be drawn until then.

In the framework of the EC FP6 CA EMF-NET, a Main Task is fully devoted to the interpretation of scientific results on epidemiological studies.