CORRESPONDENCE

Re: Time Trends in Brain Tumor Incidence Rates in Denmark, Finland, Norway, and Sweden, 1974–2003

The brief communication on brain tumor incidence in the Nordic countries by Deltour et al. (1) has gained wide media attention in Sweden and elsewhere. A typical first page headline in a major Swedish newspaper was "Mobile phones do not increased the risk for brain tumors" (2). In that newspaper article, one of the study authors (Dr Feychting) stated that "we could not find any association between brain tumors and mobile phone use."

Such statements are not scientifically defensible. Meta-analyses of case–control studies show a consistent pattern of increased risk for ipsilateral acoustic neuroma and glioma associated with mobile phone use for 10 or more years (3,4). The tumor induction period is usually decades. Considering a tumor induction period of at least 10 years in incidence data up to 2003 reflects mobile phone use before 1993. In our meta-analysis of Swedish case–control studies (5), the prevalence of mobile phone use among 2162 control subjects aged 20–80 years was 14.2% in 1993, 3.3% in 1988, and 0.7% in 1983. The impact of this low prevalence on the incidence of brain tumors would be small, if not zero. The major increase in the use of mobile phones, at least in Sweden, has occurred since 2003 (Figure 1). Unfortunately, the incidence data considered by Deltour et al. ended in 2003.

The authors consider the quality of cancer registration in the four Nordic countries to be high based on a study from the Swedish cancer register (6). However, in that article, 14% of nervous system tumors overall (48% of tumors from university hospitals) were never reported to the register.

There are large regional differences in brain tumor incidence in Sweden, which compounds the quality problems in the register (5). Underreporting of brain tumors was also noted in the Finnish cancer register (7). We are puzzled by the fact that Deltour et al. (1) opted to end their study in 2003 given that more recent incidence data would likely be more informative. The Danish cancer register was the last one to update with incidence data for 2007, and these data were available in June 2009. Statistics for 2005 and 2006 were available in October 2008 (L. Gjerstorff, Cand.Scient.Pol. Sundhedsstyrelsen, Copenhagen, Denmark, personal communication, December 7, 2009).

Data from NORDCAN (http://www.ancr.nu) show that there was a yearly statistically significantly increasing incidence of nervous system tumors in the Nordic countries not only during 1960–2007 (men: 1.02% increase, 95% confidence interval [CI] = 0.90% to 1.14% increase; women: 1.66% increase, 95% CI = 1.56% to 1.76% increase) but also during 2000–2007 (men: 1.31% increase, 95% CI = 0.08% to 2.56% increase; women: 2.02% increase, 95% CI = 0.90% to 3.15% increase).

For firm conclusions on use of mobile phones and brain tumor incidence, we must wait another decade because the large increase in mobile phone use has been during the past 10 years. Meanwhile, the existing evidence of increased risk should guide precautionary measures.

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References

1. Deltour I, Johansen C, Auvinen A, Feychting M, Klaeboe L, Schüz J. Time trends in brain tumor incidence rates in Denmark, Finland, Norway, and Sweden, 1974–2003. *J Natl Cancer Inst.* 2009;101(24):1721–1724.
2. Bratt A. Your mobile phone does not increase the risk for brain tumors. *Dagens Nyheter.* December 4, 2009.
3. Hardell L, Carlberg M, Hansson Mild K. Epidemiological evidence for an association between use of wireless phones and tumor diseases. *Pathophysiology.* 2009;16(2–3):113–122.
4. Myung SK, Ju W, McDonnell DD, et al. Mobile phone use and risk of tumors: a meta-analysis. *J Clin Oncol.* 2009;27(33):5565–5572.
5. Hardell L, Carlberg M. Mobile phones, cordless phones and the risk for brain tumours. *Int J Oncol.* 2009;35(1):5–17.

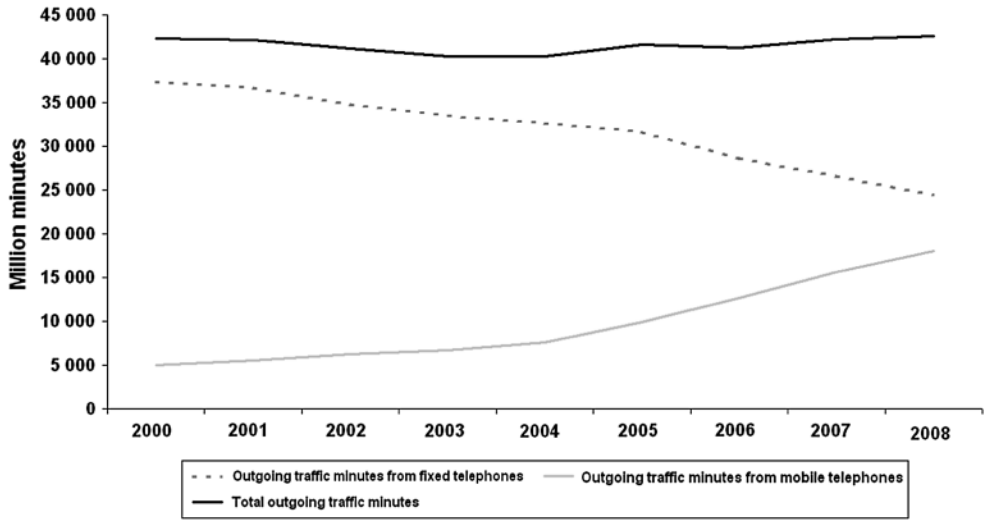

Figure 1. Outgoing traffic minutes from fixed and mobile telephones (adapted from http://www.pts.se/upload/Rapporter/Tele/2009/2009-21-swedish-telecommunications-market-2008.pdf).

6. Barlow L, Westergren K, Holmberg L, Talbäck M. The completeness of the Swedish Cancer Register—a sample survey for year 1998. *Acta Oncologica.* 2009;48(1):27–33.
7. Teppo L, Pukkala E, Lehtonen M. Data quality and quality control of a population-based cancer registry. Experience in Finland. *Acta Oncol.* 1994;33(4):365–369.

Notes

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