Brain tumors are the tumors in humans that are the most likely to be influenced by exposure to mobile telephones. In a recent issue of the Journal, Deltour et al. (1) reported that the incidence of gliomas and meningiomas did not increase between 1974 and 2003 in four Scandinavian countries (Denmark, Finland, Norway, and Sweden), where the use of mobile phone sharply increased in the mid-1990s.

Comparable trends in brain tumor incidence have been reported in other countries such that the increases in the incidence of brain tumors leveled off around 2000 in Canada and France (earlier in Sweden), as pointed out in a recent report from a working group of the French Agency for Environmental and Occupational Health Safety (Afsset) (2). In France, the annual increase in incidence of central nervous system tumors is only 0.1% in men and 0.6% in women for the period 2000–2005, as opposed to 0.2% and 1.1%, respectively, for the entire period 1980–2005. Mortality from central nervous system tumors increased annually by 0.8% in men and by 1% in women between 1980 and 2005 but has decreased by 0.6% and 0.9% annually in men and women, respectively, during the period 2000–2005 (3). In Switzerland, where mobile telephones were introduced as early as 1987, standardized brain tumor mortality rates increased in both men and women during the period 1969–2002 but remained relatively stable in persons younger than 60 years, that is, in persons who were the most likely to have been mobile telephone users; in the more recent period 1987–2002, mortality rates remained relatively stable or even decreased in all age groups (4).

Deltour et al. observed no change in incidence trends from 1998 to 2003, the time when possible association between mobile phone use and brain tumor risk would be informative about an induction period of 5–10 years, and they hypothesize that the induction period of such tumors may exceed 5–10 years. It should, however, be noted that because it is unlikely that radiofrequencies produce genotoxic effects (2), the most likely mechanism in relation to carcinogenesis, if any, is a possible promotion or progression effect. Therefore, the Interphone study was based on the assumption that an increase in the risk of brain tumors should be observed after a relatively short period of mobile telephone use (5).

Alternatively, Deltour et al. hypothesize that the increase in the risk of brain tumors is too small to be observed or may only concern subgroups of brain tumors. In this
respect, the study of eventual changes in time trends of brain tumors by anatomical location could be informative. If the use of mobile telephones increases the risk of brain tumors, then one would expect an increase in the incidence of tumors located in the temporal area, close to the ear, rather than an increase in frontal tumors, as was observed in a Swedish case–control study (6) but not in a German case–control study from the Interphone group (7). Hence, because of mechanistic plausibility, future analyses of temporal trends in brain tumor incidence should present data by anatomical sites before reaching the conclusion that exposure to mobile phones has no effect on the risk of brain tumors.

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References

Notes
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