Lönn et al. (1) recently published an article on use of cellular telephones and the risk of brain tumors. In spite of a reported overall decreased risk, an increased risk was found for tumors on the same side of the brain as the cellular phone had been used (ipsilateral exposure).

Use of cellular telephones was assessed mostly by personal interviews. In contrast to our procedure regarding this topic (2), the interviewer was aware of whether the study subject was a case (patient) or a control, thereby potentially introducing observational bias.

The interviews were extensive and computer aided. It is likely that such an interview is stressful for a patient with a recent brain tumor diagnosis and operation. According to our experience, a better option is to start with a mailed questionnaire that can be answered by the patient during a period of well-being. This procedure can be accomplished without disclosing during data collection whether a person is a case or a control.

The diagnosis of tumor type as well as grading is based on histopathology. In the Lönn et al. study (1), histopathology was available for 328 (88 percent) of the 371 glioma cases and for 225 (82 percent) of the meningioma cases. It is remarkable that 345 glioma cases were stratified according to grades I–IV, although histopathology was available for only 328.

To analyze laterality (i.e., the risk of brain tumors on the same side or the opposite side to where the mobile phone was held during phone calls), Lönn et al. (1) split the cases into two subsets: those with left- and those with right-side tumors. Controls were randomly allocated to one of these subsets at a 1:1 ratio. Odds ratios calculated within these subsets were then pooled to give an overall estimate. Exposure categorization was questionable for ipsilateral but completely faulty for contralateral use of a mobile phone. Subjects were considered exposed if they used the phone on the same or on both sides. On the other hand, if they used the phone on the contralateral side or did not regularly use a mobile phone, they were considered unexposed. Hence, the reference category included subjects using a mobile phone regularly but who stated that they used it on the side opposite to where the tumor was located. For contralateral exposure, the opposite exposure classification was used.

There are some discrepancies concerning number of cases and the data in the Swedish Cancer Registry (M. Talback, Swedish Cancer Registry, personal communication, 2005) when the same criteria were used to select cases, as follows:

<table>
<thead>
<tr>
<th>No. of cases</th>
<th>Cancer Registry</th>
<th>Lönn et al. (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intracranial glioma</td>
<td>469</td>
<td>499</td>
</tr>
<tr>
<td>Astrocytoma grades I–II</td>
<td>82</td>
<td>73*</td>
</tr>
<tr>
<td>Astrocytoma grades III–IV</td>
<td>370</td>
<td>272*</td>
</tr>
<tr>
<td>Meningioma</td>
<td>337</td>
<td>320</td>
</tr>
</tbody>
</table>

* Interviewed cases.

The large difference, especially for astrocytoma grades III–IV, indicates methodological problems. Most likely, these approximately 100 glioma cases from whom no information could be obtained are predominantly among the missing 98 highly malignant astrocytoma cases.

Of the controls in the glioma and meningioma study (1), 282 (29 percent) refused to participate. Among some of these nonresponders, a short interview was conducted; only 34 percent reported regular use of a mobile telephone compared with 59 percent of the responders. If this discrepancy extends to the total group of nonresponders, the true percentage of mobile phone users among controls would be approximately 52 percent. Hence, this figure would be lower than for glioma (58 percent exposed) and acoustic neuroma (60 percent) cases. Only for meningioma, with 43 percent exposed cases, was a lower percentage reported. However, considering the sex ratio for meningioma of approximately 2:1, a lower percentage of mobile phone users has to be expected because of the lower rate of use by women.

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REFERENCES


Lennart Hardell$^{1,2}$, Kjell Hansson Mild$^{2,3}$, and Michael Kundi$^4$

$^1$Department of Oncology, University Hospital, SE-701 85 Örebro, Sweden
$^2$Department of Natural Sciences, Örebro University, SE-701 82 Örebro, Sweden
$^3$National Institute for Working Life, S-907 13 Umeå, Sweden
$^4$Department for Occupational and Social Hygiene, Institute of Environmental Health, A-1095 Vienna, Austria

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