Epidemiological Study (case-control study)

Case-control study of the association between the use of cellular and cordless telephones and malignant brain tumors diagnosed during 2000-2003. epidemiol.

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Aim of study (according to author)

A case-control study on the use of cellular and cordless telephones and the risk for brain tumors was conducted in Sweden.
Background/further details:
This study reports results for malignant brain tumors whereas the results for benign brain tumors, mainly meningioma and acoustic neuroma, are presented in publication 12068.
Subjects who started their use of a mobile or cordless phone within one year prior diagnosis were classified as unexposed.

Endpoint/type of risk estimation

- brain tumor: malignant brain tumor

Estimate of incidence by odds ratio (OR)

Exposure

- mobile phone/mobile communication system, analog mobile phone, digital mobile phone, cordless phone
- type of exposure: personal
- assessment by questionnaire (mean number of daily calls and minutes, use in a car with fixed external antenna, use of hands-free device, ear most frequently used during calls, first part of telephone number (to differentiate between analog and digital cellular phones))
- assessment by interview (supplementing data)
- assessment by calculation (cumulative use in hours)

groups of exposure:

Reference group 1:	unexposed
group 2:	analog, 1-5-year-latency
group 3:	analog, > 5-10-year latency
group 4:	analog, > 10-year latency
group 5:	analog, total, > 1-year latency
group 6:	analog, ≤ 80 h, 1-5-year-latency
group 7:	analog, ≤ 80 h, 5-10-year-latency
group 8:	analog, ≤ 80 h, > 10-year latency
group 9:	analog, ≤ 80 h, total, > 1-year latency
group 10:	analog, > 80 h, 1-5-year-latency
group 11:	analog, > 80 h, 5-10-year-latency
group 12:	analog, > 80 h, > 10-year latency
group 13:	analog, > 80 h, total, > 1-year latency
group 14:	digital, 1-5-year-latency
group 15:	digital, > 5-10-year latency
group 16:	digital, > 10-year latency
group 17:	digital, total, > 1-year latency

group 18:	digital, ≤ 64 h, 1-5-year-latency
group 19:	digital, ≤ 64 h, > 5-10-year latency
group 20:	digital, ≤ 64 h, > 10-year latency
group 21:	digital, ≤ 64 h, total, > 1-year latency
group 22:	digital, > 64 h, 1-5-year-latency
group 23:	digital, > 64 h, > 5-10-year latency
group 24:	digital, > 64 h, > 10-year latency
group 25:	digital, > 64 h, total, > 1-year latency
group 26:	cordless, 1-5-year-latency
group 27:	cordless, > 5-10-year latency
group 28:	cordless, > 10-year latency
group 29:	cordless, total, > 1-year latency
group 30:	cordless, ≤ 243 h, 1-5-year-latency
group 31:	cordless, ≤ 243 h, > 5-10-year latency
group 32:	cordless, ≤ 243 h, > 10-year latency
group 33:	cordless, ≤ 243 h, total, > 1-year latency
group 34:	cordless, > 243 h, 1-5-year-latency
group 35:	cordless, > 243 h, > 5-10-year latency
group 36:	cordless, > 243 h, > 10-year latency
group 37:	cordless, > 243 h, total, > 1-year latency

Population

- **case group**
  men and women, aged from 20 to 80 years
  diagnosis: malignant brain tumor, histopathologically verified
  observation period: July 2000 - December 2003
  study location: Uppsala/Örebro and Linköping regions, Sweden
  source of data: Cancer Registry
  exclusion criteria: deceased, medical conditions

- **control group**
  selection: population-based
  matching: sex, age, area, 1:1 (case:control)

Further parameters acquired by questionnaire (exposure to certain agents, lifetime work history, socioeconomic index)

Study size	cases	controls
number eligible	359	820
number participating	317	692
rate of participating	88%	84%

Statistically significant results

group	exposure	endpoint	cases	controls	parameter (OR)	confidence interval
4	analog, > 10-year latency	malignant brain tumor	48	40	3.5	2.0-6.4
5	analog, total, > 1-year latency	malignant brain tumor	68	79	2.6	1.5-4.3

16	digital, > 10-year latency	malignant brain tumor	19	18	3.6	1.7-7.5
17	digital, total, > 1-year latency	malignant brain tumor	198	343	1.9	1.3-2.7
28	cordless, > 10-year latency	malignant brain tumor	30	35	2.9	1.6-5.2
29	cordless, total, > 1-year latency	malignant brain tumor	171	305	2.1	1.4-3.0

Statistical analysis using unconditional logistic regression (adjusted for age, sex, socioeconomic status, year of diagnosis)

Results/conclusion (according to author)

The results showed an increased risk for malignant brain tumors in association with the use of analog and digital cellular phones and cordless phones. The risk increased with the latency period and the number of hours use for phone calls.

(Study character: epidemiological study, case-control study)

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