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

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In Denmark, Finland, Norway, and Sweden, the use of mobile phones increased sharply in the mid-1990s; thus, time trends in brain tumor incidence after 1998 may provide information about possible tumor risks associated with mobile phone use. We investigated time trends in the incidence of glioma and meningioma in Denmark, Finland, Norway, and Sweden from 1974 to 2003, using data from national cancer registries. We used joinpoint regression models to analyze the annual incidence rates of glioma and meningioma. During this period, 59 984 men and women aged 20–79 years were diagnosed with brain tumors in a population of 16 million adults. All statistical tests were two-sided. From 1974 to 2003, the incidence rate of glioma increased by 0.5% per year (95% confidence interval [CI] = 0.2% to 0.8%) among men and by 0.2% per year (95% CI = –0.1% to 0.5%) among women and that of meningioma increased by 0.8% per year (95% CI = 0.4% to 1.3%) among men, and after the early 1990s, by 3.8% per year (95% CI = 3.2% to 4.4%) among women. No

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change in incidence trends were observed from 1998 to 2003, the time when possible associations between mobile phone use and cancer risk would be informative about an induction period of 5–10 years.

CONTEXT AND CAVEATS

Prior knowledge

Although mobile phone use has frequently been proposed as a risk factor for brain tumors, neither a biological mechanism to explain this association nor the etiology of brain tumors is known. Mobile phone use in Denmark, Finland, Norway, and Sweden increased sharply in the mid-1990s.

Study design

An investigation of time trends in the incidence of glioma and meningioma among adults from 1974 to 2003 in Denmark, Finland, Norway, and Sweden using data from national cancer registries.

Contribution

From 1974 to 2003, brain tumor incidence rates in Denmark, Finland, Norway, and Sweden were stable, decreased, or continued a gradual increase that started before the introduction of mobile phones. No change in incidence trends was observed from 1998 to 2003, the time when possible associations between mobile phone use and cancer risk would be informative about an induction period of 5–10 years.

Implications

The lack of a trend change in incidence from 1998 to 2003 suggests that the induction period relating mobile phone use to brain tumors exceeds 5–10 years, the increased risk in this population is too small to be observed, the increased risk is restricted to subgroups of brain tumors or mobile phone users, or there is no increased risk.

Limitations

Possible incompleteness of cancer registration and the increased access to improved diagnostic tools may limit the interpretation of the trends in meningioma incidence over time.

From the Editors

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