

## Svezia, L'autorità Svedese per la protezione dalle radiazioni fa valutare le ricerche epidemiologiche

Svezia, L'Autorità Svedese per la protezione dalle radiazioni fa valutare le ricerche epidemiologiche. Due esperti di studi epidemiologici, John D. Boyce jr, e di Joseph Mc Laughlin dell'International Epidemiology Institute, (USA) hanno controllato dal punto di vista della metodologia dell'indagine scientifica gli studi epidemiologici finora pubblicati sulla relazione tra l'uso dei telefoni cellulari e il rischio di cancro. E' stato l'organo pubblico preposto al problema, ossia l'Autorità Svedese per la protezione dalle radiazioni a chiamare due epidemiologi di fama per verificare l'adeguatezza scientifica e le procedure usate nei diversi studi sulla possibile correlazione tra esposizione ai campi elettromagnetici e l'insorgenza di tumori al cervello. In specifico i due epidemiologi hanno rilevato come i primi studi statunitensi e svedesi (in specifico, quello di Lennart Hardell dimostra un'associazione tra l'uso del telefono cellulare e il cancro) presentino carenze metodologiche dovute, nel caso della ricerca statunitense, al numero troppo limitato di casi analizzati e alla durata limitata dell'esperimento e, nel caso della ricerca svedese a consistenti limitazioni di tipo metodologico. Al contrario, gli altri cinque studi, condotti in tre diversi Paesi, Stati Uniti, Finlandia, Danimarca, controllati da Boyce e Mc Laughlin, sono risultati validi sul piano della metodologia scientifica seguita. Ciascuna delle cinque indagini "validate" dagli esperti chiamati dall'Autorità Svedese, pur condotte secondo modalità differenti (vedi tabella), confermano, con un ragionevole grado di certezza, che si può escludere un legame di causalità tra uso di cellulari e insorgenza del cancro.

| Study                                  | Type                                                                                         | Population                                                                                                                          | Findings                                                                                                         | Comment                                                                                                                           |
|----------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Rothman et al.<br>Epidemiology<br>1996 | Cohort.<br>Mortality.<br>USA (1994).<br>linkage of subscriber<br>lists with<br>death records | 60,000 mobile (car<br>or bag) phone<br>subscribers, 50,000<br>portable (handheld)<br>phone users,<br>150,000 unknown<br>phones type | Total mortality RR=0.86 (95%<br>CI 0.5-1.5) comparing hand-<br>held phone users with non-<br>handled phone users | Follow-up very<br>short. Only total<br>mortality . Small<br>number of deaths .<br>Limited exposure<br>assessment.<br>Inconclusive |
| Dreyer et al.<br>JAMA 1999             | Cohort.<br>Mortality.<br>USA (1994).<br>Linkage of<br>subscriber                             | 285,561 cellular<br>phone subscribers.<br>Expansion of<br>Rothman et al.<br>(1996)                                                  | No dose response for all<br>cancers, brain cancer or<br>leukemia.                                                | Follow-up very<br>short. Number of<br>specific cancers<br>small, e.g., 6 brain<br>cancers. Limited                                |

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|                                                                                | lists with death records                                                                                                       |                                                              |                                                                                                                                                                                                                                                                    | exposure assessment. Non-informative.                                                                                                                                                                                          |
| Hardell et al.<br>Int J Oncol 1999<br>MedGenMed 2000<br>Eur J Cancer Prev 2001 | Case-control. Prevalence. Sweden (1994-96). Mail questionnaire.                                                                | 209 brain tumors, 425 controls.                              | No association with ever use (OR 0.98), long-term use (OR 1.2) or hours used (OR 0.8). Suggestive associations with "same-side" use (OR 2.42) and with diagnostic x-rays of head and neck (OR 1.64). No dose response for gliomas, meningiomas, acoustic neuromas. | Prevalence studies exclude those who died and are not informative with regard to causality. Small numbers. Interview, selection and response bias likely. Methodology questioned (Ahlbom and Feychting 1999). Non-informative. |
| Muscat et al.<br>JAMA 2000                                                     | Case-control. Incidence. USA (1994-98). Hospital interview conducted shortly after diagnosis using structured questionnaire.   | 469 brain cancer, 422 controls.                              | No association with ever use (OR 0.9), years used (OR 0.7), hours used (OR 0.7), temporal lobe (OR 0.9).                                                                                                                                                           | Hospital controls. Few long-term users, 88% analogue phones. Broad range of usage for dose-response analysis. No evidence for association.                                                                                     |
| Inskip et al<br>NEJM 2001                                                      | Case-control. Incidence. USA (1994-98). Hospital interview conducted shortly after diagnosis using structured questionnaire.   | 782 brain tumors, 799 controls.                              | No association with ever use (OR 0.9), regular use (OR 0.9) or hours used (OR 0.7). No association with gliomas (N=489), meningiomas (N=197), acoustic neuromas (N=96), temporal lobe, or laterality.                                                              | Hospital controls. Few long-term users. Mostly analogue phones. Convincing evidence against association (Trichopoulos and Adami 2001). 9                                                                                       |
| Muscat et al.<br>Neurology 2002                                                | Case-control. Incidence. USA (1997-1999). Hospital interview conducted shortly after diagnosis using structured questionnaire. | 90 acoustic neuromas, 86 controls.                           | No association with regular use (OR 0.9) or with frequency or duration of use. No association with laterality and handedness.                                                                                                                                      | Hospital controls. Few long-term users. Mainly analogue. Small numbers. Consistent with USA (Inskip et al. 2001) and Danish (Johansen et al. 2001) studies.                                                                    |
| Johansen et al. JNCI 2001                                                      | Cohort. Incidence. Denmark (1982-95). Linkage of subscriber lists with cancer incidence                                        | 420,095 subscribers identified from two operating companies. | No association with brain cancer (SIR 0.95, N=154) leukemia (SIR 0.97) or any cancer, including ocular melanoma (SIR 0.59). Brain cancer risk did not vary by type of phone, duration of subscription, histologic subtype or anatomic location.                    | Nationwide. No response bias. Large numbers but duration and extent of use unknown. User and subscriber may not be same. Small percentage of long-term users.                                                                  |

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|                                         | data.                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                              | Strong evidence against association (Park 2001).                                                                                                                                                                                                       |
| Auvinen et al.<br>Epidemiology 2002     | Case-control. Incidence. Finland (1996). Tumors identified from cancer registry for single year, 1996, and matched against subscriber records. | 398 brain tumors, 34 salivary gland cancers. 5 controls per case.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | No significant associations for brain tumors (OR 1.3, gliomas and meningiomas) or salivary gland cancers (OR 1.3). Suggested increase for gliomas for analogue phone use, but not supported by tumor location analyses (lobe and laterality did not differ between users and nonusers). No associations with digital phones. | Nationwide, registrybased, subscriber lists, no response bias. Usage seems unusually low, only 11%. Few users > 2 y. Inadequate exposure assessment.                                                                                                   |
| Hardell et al<br>Eur J Cancer Prev 2002 | Case-control. Prevalence. Sweden (1997- 2000). Mail questionnaire.                                                                             | No association found for malignant tumors for analogue, digital or cordless phones. Significant association for analogue phones and all tumors (OR 1.3) for >1 y latency but not for >5 y latency (OR 1.1). Significant association for analogue phones and acoustic neuroma (OR 3.5). Borderline significant association for cordless phones and all tumors (OR 1.3) for >5 y latency. Increased ipsilateral (same side) risks balanced by decreased contralateral risks for virtually all phones and locations. No evidence of dose response by hours of phone use | 1,303 matched pairs of brain tumor cases and controls.                                                                                                                                                                                                                                                                       | Prevalence studies exclude those who died and are not informative with regard to causality. Interview, selection and response bias likely. Acoustic neuroma increase not consistent with previous study in Sweden or 3 other studies. Non-informative. |