Survival of European patients with central nervous system tumors

Milena Sant1, Pamela Minicozzi1, Susanna Lagorio2, Tom Børge Johannesen3, Rafael Marcos-Gragera4, Silvia Francisci2,5 and the EUROCARE Working Group6

1 Analytical Epidemiology Unit, Department of Preventive and Predictive Medicine, Fondazione IRCCS Istituto Nazionale dei Tumori, Via Venezian 1, Milan, Italy
2 National Centre for Epidemiology, Surveillance and Health Promotion, Istituto Superiore di Sanità, Viale Regina Elena 299, Rome, Italy
3 Cancer Registry of Norway, Department of Clinical and Registry-based Research, Institute of Population-based Cancer Research, Fridj of Nansens vei 19, Majorstuen, Oslo, Norway
4 Epidemiology Unit and Girona Cancer Registry, Oncology Coordination Plan, Department of Health and Catalan Institute of Oncology, Girona, Spain
5 Department of Cancer Epidemiology, Istituto Superiore di Sanità, Viale Regina Elena 299, Rome, Italy
6 See Appendix for EUROCARE Working Group members

We present estimates of population-based 5-year relative survival for adult Europeans diagnosed with central nervous system tumors, by morphology (14 categories based on cell lineage and malignancy grade), sex, age at diagnosis and region (UK and Ireland, Northern, Central, Eastern and Southern Europe) for the most recent period with available data (2000–2002). Sources were 39 EUROCARE cancer registries with continuous data from 1996 to 2002. Survival time trends (1988 to 2002) were estimated from 24 cancer registries with continuous data from 1988. Overall 5-year relative survival was 85.0% for benign, 19.9% for malignant tumors. Benign tumor survival ranged from 90.6% (Northern Europe) to 77.4% (UK and Ireland); for malignant tumors the range was 25.1% (Northern Europe) to 15.6% (UK and Ireland). Survival decreased with age at diagnosis and was slightly better for women (malignant tumors only). For glial tumors, survival varied from 83.5% (ependymoma and choroid plexus) to 2.7% (glioblastoma); and for non-glioma tumors from 96.5% (neurinoma) to 44.9% (primitive neuroectoderm tumor/medulloblastoma). Survival differences between regions narrowed after adjustment for morphology and age, and were mainly attributable to differences in morphology mix; however UK and Ireland and Eastern Europe patients still had 40% and 30% higher excess risk of death, respectively, than Northern Europe patients (reference). Survival for benign tumors increased from 69.3% (1988–1990) to 77.1% (2000–2002); but survival for malignant tumors did not improve indicating no useful advances in treatment over the 14-year study period, notwithstanding major improvement in the diagnosis and treatment of other solid cancers.

Published data on the survival of patients with central nervous system (CNS) tumors are largely based on clinical studies. Some survival studies derived from the population-based data provided by cancer registries (CRs) are available, but the tumors are grouped into broad categories that include disparate morphologies of widely varying prognoses.1–3 These studies indicate that survival for malignant glial tumors is generally low, and that survival for benign tumors (e.g., meningioma) is considerably better. However, information on benign tumors is collected by relatively few CRs.1,4,5

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Correspondence to: Milena Sant, Analytical Epidemiology Unit, Department of Preventive and Predictive Medicine, Fondazione IRCCS Istituto Nazionale dei Tumori, Via Venezian 1, 20133 Milan, Italy, Tel: +39 02 23903520; Fax: +39-02-23903516, E-mail: milena.sant@istitutotumori.mi.it

The population-based EUROCARE study (European Cancer Registry-Based Study on Survival and Care of Cancer Patients) on malignant brain tumors diagnosed in Europe between 1985 and 1989 found that age-standardized 5-year relative survival varied little across Europe, but was conspicuously low in Scotland, Estonia and Poland, and varied more in younger patients.6 The influence of morphology mix or other factors on survival differences across Europe was not investigated. This study also found an overall increase in survival with time (1978 to 1989), which was most marked in younger patients, and mainly confined to 1-year survival in older patients.

By contrast, a population-based SEER study on US patients indicated that the survival of adult and elderly patients with most types of CNS tumors remained substantially stable over the period 1973–2001.7 However systematic survival comparisons between Europe and US patients with CNS tumors—that might explain this difference—do not appear to be available.

Although survival for selected CNS morphologies was investigated as part of the RARECARE project, based on EUROCARE data,8–10 we are aware of no systematic studies.