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Epidemiology of glial and non-glial brain tumours in Europe

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Abstract To the central nervous system (CNS) belong a heterogeneous group of glial and non glial rare cancers.
The aim of the present study was to estimate the burden (incidence, prevalence, survival and proportion of cured) for the principal CNS cancers in Europe (EU27) and in European regions using population-based data from cancer registries participating in the RARECARE project.
We analysed 44,947 rare CNS cancers diagnosed from 1995 to 2002 (with follow up at 31st December 2003): 86.0% astrocytic (24% low grade, 63% high grade and 13% glioma NOS), 6.4% oligodendroglial (74% low grade), 3.6% ependymal (85% low grade), 4.1% Embryonal tumours and 0.1% choroid plexus carcinoma. Incidence rates vary widely across European regions especially for astrocytic tumours ranging from 3/100,000 in Eastern Europe to 5/100,000 in United Kingdom and Ireland. Overall, about 27,700 new rare CNS cancers were estimated every year in EU27, for an annual incidence rate of 4.8 per 100,000 for astrocytic, 0.4 for oligodendroglial, 0.2 for ependymal and embryonal tumours and less than 0.1 for choroid plexus carcinoma.
More than 154,000 persons with rare CNS were estimated alive (prevalent cases) in the EU at the beginning of 2008.

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Five-year relative survival was 14.5% for astrocytic tumours (42.6% for low grade, 4.9% for high grade and 17.5% for glioma NOS), 54.5% for oligodendroglial (64.9% high grade and 29.6% low grade), 74.2% for ependymal (80.4% low grade and 36.6% high grade), 62.8% for choroid plexus carcinomas and 56.8% for embryonal tumours. Survival rates for astrocytic tumours were relatively higher in Northern and Central Europe than in Eastern Europe and in UK and Ireland. The different availability of diagnostic imaging techniques and/or radiation therapy equipment across Europe may contribute to explain the reported survival differences. The estimated proportion of cured patients was 7.9% for the 'glial' group to which belong astrocytic tumours.

Overall results are strongly influenced by astrocytic tumours that are the most common type. This is the first study to delineate the rare CNS cancer burden in Europe by age, sex and European region.