Occupational exposure to ionizing and non-ionizing radiation and risk of glioma

Dear Sir,

Karipidis et al. [1] report on a case–control study of occupational exposure to ionizing and non-ionizing radiations and the risk of glioma in which they found no increase in risk, apart from to ultraviolet. However, their methodology is questionable and raises the possibility of a type-2 error (false negative) conclusion.

Karipidis et al. [1] studied an old group of 416 cases of glioma diagnosed in Australia, 1987–1991. Assuming the latency period could be 10–20+ years then exposures between 1977 and 1967 and earlier are relevant. They obtained information regarding jobs by interview from the 56% of cases who were competent but in 44% of cases from the next of kin. It is not stated how it was determined that the cases who were interviewed still had accurate recall of events 20–30 years distant or how the accuracy of recall by kin was confirmed. By comparison, proxies were needed in only 2% of controls. Therefore, the accuracy of the work history of a substantial proportion of cases compared to controls is questionable.

Exposure to the radiations was estimated using the job exposure matrix, FINJEM developed in Finland and assumed to apply in Australia. After determining the work histories, FINJEM data were applied to calculate the exposures of cases and controls for four time periods between 1960 and 2003. However, in the original paper describing FINJEM it is stated that ‘All agents have not been assessed for each period’ and ‘Only chemical exposures have been systematically assessed for each period’ (p. 411, ref. [2]). This queries the whole basis of the paper because it is erroneous to apply recent exposure estimates to past ones due to major changes in technology and better work practices. In addition, any measurement of electromagnetic fields in the relevant period (1960–1970) used equipment that measured a ‘spot sample’ and techniques that were problematic (field perturbations, etc) yielding error-prone exposure estimates by today’s standards. The authors state that a study of chemical exposures in Australia in 2001 found FINJEM useful but give no validation that FINJEM estimates apply to EMF exposures decades before in Australia.

Table 1 of Karipidis et al. [1] shows occupations with the highest exposures to radio-frequency radiation. The writer has first-hand experience of the Australian telecommunications industry during the relevant exposure period and considers the classification ‘telephone installation crew, linemen and cable jointers’ as not appropriate in Australia. The occupation of ‘linemen’ involved 10 000s of men who laid phone cables but were not exposed to RF. A special occupational group called ‘radio-linemen’ numbering a few thousand did rigging work for radio communications and broadcasting (photo) and were sometimes exposed to appreciable levels of RF (until safe work practices were introduced). Inclusion of a small number of men with appreciable exposures amongst a large number of men with zero exposure to RF will dilute any effect resulting in a null finding. In addition, exposures to RF of the radio-linemen were intermittent and unpredictable. It is highly improbable that exposure data from Finnish workers can be applied to these Australian workers.

Bruce Hocking
9 Tyrone St, Camberwell,
Victoria 3124, Australia
e-mail: bruhoc@connexus.net.au
References
