Abstracts

**OCCUPATIONAL EXTREMELY LOW FREQUENCY MAGNETIC FIELD EXPOSURE AND CANCER INCIDENCE IN A LARGE PROSPECTIVE COHORT STUDY**

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Methods The INTEROCC study is formed by seven participating countries Australia, Canada, France, Germany, Israel, New Zealand, United Kingdom) from the parent INTERPHONE study. Cases of primary brain glioma and meningioma aged at least 20 years were recruited between 2000 and 2004. Detailed occupational history data was collected for jobs held at least six months. Job titles were coded into standard international occupational classifications and estimates of mean workplace ELF-MF exposure assigned based on a job exposure matrix. Conditional logistic regression was used to obtain adjusted odds ratios and 95% confidence intervals.

Results Data on a total of 3,978 brain tumour cases, including 2,054 gliomas and 1,924 meningiomas, were analysed with 5,601 control subjects. Estimates of cumulative exposure, time-weighted average exposure, maximum exposure, and exposure duration were calculated for exposure 1–4, 5–9, and 10+ years in the past. Estimates of mean cumulative exposure were higher for males, older participants, and participants with lower levels of educational attainment. Positive associations between different indicators of ELF-MF exposure in the 1–4 year time window and glioma but not meningioma were observed.

Conclusion Occupational ELF-MF exposure may play a role in the promotion of glioma, however findings may also be due to reverse causality or other methodological sources of bias.

**QUANTITATIVE MEASUREMENTS OF OCCUPATIONAL EXPOSURE TO STATIC MAGNETIC STRAY FIELDS FROM MRI SCANNERS IN CLINICAL AND RESEARCH ENVIRONMENTS**

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Methods Occupational exposure to static magnetic fields (B) and rate of change of field due to movement through a static magnetic field (dB/dt) were measured using a Magnetic Field Dosimeter (University of Queensland). About 480 predominantly full-shift measurements were collected from more than 300 employees working at 14 clinical or research MRI facilities. During measurement days, participants kept a log of the tasks they performed and the scanner(s) at which they worked.

Results Highest peak B and dB/dt exposures were observed among MRI radiographers and research staff. Peak exposures were highest in academic hospitals (mean [range]: 814 mT [36 - 4928]; 1291 mT/s [27 - 5057]) and lowest for people working in experimental animal imaging facilities (mean [range]: 227 mT [31 - 625]; 395 mT/s [32 - 1329]). Scanner field strength showed a strong association with peak B and dB/dt exposure when subjects worked near a closed bore scanner. However, for small bore scanners this association appeared to be negative. This could be partially explained by variability in shielding (active vs. passive) of the small-bore magnets.

Conclusions For assessment of exposure for epidemiological studies classification solely based on scanner field strength is insufficient. The type of scanner (open/closed/extremity scanner; large/small bore) and type of shielding of the static magnetic field (active/passive) should be taken into account as well.