

Basic facts MCC-Spain

Subjects

- prostate cancer: 1.112 cases
- breast cancer: 1.738 cases
- colorectal cancer: 2.140 cases
- gastro-esophageal cancer: 459 cases
- chronic lymphocytic leukaemia (CLL): 559 cases
- population controls: 4.098 subjects

Age 20-85

Enrolment: 2008-2013

Follow-up cases: start 2016

Information collected:

general questionnaire, FFQ, full residential (geocodified) and occupational history, blood samples (genotyped), clinical information (cases), additional information in subsamples



Map of areas in Spain recruiting subjects, MCC-Spain



MCC-Spain Study researchers, León meeting

The MCC-Spain study, conducted within the Spanish Consortium for Biomedical Research in Epidemiology & Public Health (CIBERESP), is a unique initiative to evaluate etiological factors for common cancers and will promote cancer research and prevention in Spain.

Coordination

- Manolis Kogevinas**
ISGlobal, Barcelona
manolis.kogevinas@isglobal.org
- Marina Pollán**
ISCIII, Madrid
mpollan@isciii.es

Contact information

- Mar Ferrer**
Email: mar.ferrer@isglobal.org
Phone: +34 93 214 73 30

www.mccspain.org



MCC-Spain Study

Population based multicase-control study on common tumours in Spain

The largest case-control study in Spain to date about environmental risk factors

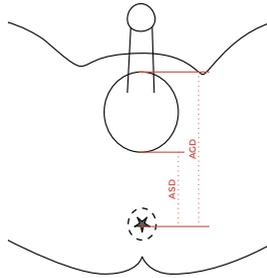


Main findings

Hormone disruption

Numerous studies examined the association of endocrine disruptors with breast and other cancers but the evidence is not clear.

In animals, anogenital distance has been shown to be related to the action of fetal androgens resulting in shorter distances in male rats. In MCC-Spain we showed that a phenotype reflecting normal in utero sexual development was associated with a **lower risk of prostate cancer**.



We found an **increased breast cancer risk** in relation to the combined activity of organohalogenated xenoestrogen mixtures (TEXB assay). Our results show the importance of evaluating mixtures of endocrine disrupting chemicals rather than single compounds when studying hormone related cancers.

Night Shift work

In 2007 IARC/WHO evaluated that "Shift work involving circadian disruption is probably carcinogenic to humans" (Group 2A), but there was only limited evidence from epidemiologic studies in humans.

In MCC-Spain we found:

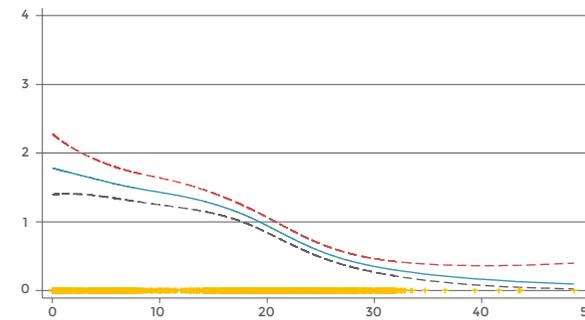
- 30% increase in **prostate cancer risk** among long term shift workers, even higher for poor prognosis cancers
- 20% increased **risk for breast cancer** in night shift workers
- chronotype (the individual propensity to be morning or evening type) modified these effects
- some increased **risks for colorectal cancer**, stomach cancer and chronic lymphocytic leukemia but results were not entirely consistent
- Gene-environment interactions were observed for night shift work with genes in circadian pathways and breast cancer.

Drinking Water Contaminants

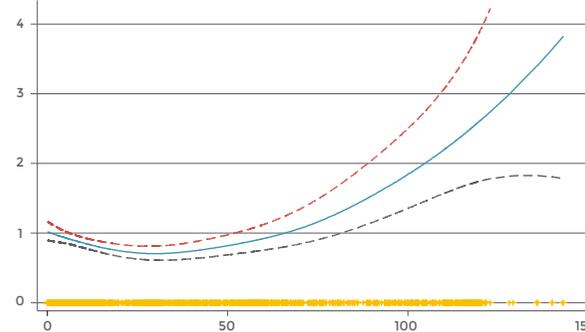
Drinking water contaminants such as trihalomethanes (THM) have been associated with increased cancer risk in animals and with bladder cancer in humans.

We applied extensive methods for exposure assessment to disinfection byproducts and did not identify an overall association of exposure to THM in drinking water with colorectal cancer risk but found an association with high levels of exposure to brominated compounds (see figure).

Chloroform



Brominated



Ingested nitrate leads to endogenous formation of N-nitroso compounds that are carcinogens in animals. In MCC-Spain waterborne ingested nitrate was associated with breast cancer among postmenopausal women with high red meat consumption. A positive association between colorectal cancer risk and waterborne ingested nitrate was also suggested.

Infections

Polyomaviruses, Epstein-Barr Virus, Helicobacter Pylori and other infectious agents are being examined in relation to different tumors.

The colonic opportunist *Streptococcus gallolyticus* (SG) subspecies *gallolyticus* is potentially associated with colorectal cancer but large-scale seroepidemiological data for SG antibodies are missing. We demonstrated an approximate 40% to 60% increased risk associated with specific individual proteins.

Aberrant Epstein-Barr virus antibody patterns revealed by immunoblot analysis were detectable at very early stages of chronic lymphocytic leukemia (CLL), providing further evidence of an abnormal immunological response against EBV in patients with chronic lymphocytic leukemia.

Mapping and Green spaces

Addresses of all subjects have been geocoded.

Geographical Information Systems (GIS) are used to evaluate proximity to green spaces, air-pollution and environmental light. The map shows a satellite map of environmental light (NASA) and the location of MCC-Sp subjects in Madrid.

