

What Your Patient Reads

Does prenatal exposure to magnetic-fields cause asthma?

The Globe and Mail recently reported on a new study in the *Archives of Pediatrics and Adolescent Medicine* linking asthma in children to the magnetic-field exposure of their mothers during pregnancy. Researchers led by Dr. De-Kun Li at the Kaiser Permanente Division of Research in Oakland, CA followed pregnant women and their children for up to 13 years. These pregnant women wore meters to measure their daily exposure to magnetic fields (such as those from microwaves, computers, and power lines). The monitors did not measure electric-field exposure. Of the 626 children born to these women, 130 (20%) were diagnosed with asthma. Women with the highest levels of magnetic-field exposure had a 3.5-fold increased risk of having a child later diagnosed with asthma than women with lower levels of exposure. The study also found that women with asthma or pregnant with their first child (both risk factors for asthma in children) were more likely to have children with asthma if they were also exposed to high levels of magnetic-field exposure. Dr. Li advises to avoid electromagnetic fields as much as possible, especially during pregnancy.

The Globe and Mail article points out that many health experts, including Health Canada and the World Health Organization's International Agency for Research on Cancer, do not agree with the suggested risks of electromagnetic field exposure. Dr. Warren Foster, a professor in the Department of Obstetrics and Gynecology at McMaster University, downplays the significance of Dr. Li's findings and suggests other factors may have influenced the results.

View full story at:

Study links asthma to magnetic-field exposure of pregnant moms. The Globe and Mail. August 1, 2011. <http://www.theglobeandmail.com/life/health/new-health/conditions/asthma/study-links-asthma-to-magnetic-field-exposure-of-pregnant-moms/article2116238/>

Referenced Work

Li DK, Chen H, Odouli R. Maternal Exposure to Magnetic Fields During Pregnancy in Relation to the Risk of Asthma in Offspring. *Arch Pediatr Adolesc Med*. 2011 Aug 1. [Epub ahead of print] PMID: 21810627

Additional References from the Medical Literature

Li DK, et al. A population-based prospective cohort study of personal exposure to magnetic fields during pregnancy and the risk of miscarriage. *Epidemiology*. 2002 Jan;13(1):9-20. PMID: 11805581.

Lee GM, et al. A nested case-control study of residential and personal magnetic field measures and miscarriages. *Epidemiology*. 2002 Jan;13(1):21-31. Erratum in: *Epidemiology*. 2003 Mar;14(2):255. PMID: 11805582.

Li P, McLaughlin J, Infante-Rivard C. Maternal occupational exposure to extremely low frequency magnetic fields and the risk of brain cancer in the offspring. *Cancer Causes Control*. 2009 Aug;20(6):945-55. Epub 2009 Feb 18. PMID: 19224378.

Hardell L, Sage C. Biological effects from electromagnetic field exposure and public exposure standards. *Biomed Pharmacother*. 2008 Feb;62(2):104-9. Epub 2007 Dec 31. Review. PMID: 18242044.

Cech R, Leitgeb N, Pedititis M. Fetal exposure to low frequency electric and magnetic fields. *Phys Med Biol*. 2007 Feb 21;52(4):879-88. Epub 2007 Jan 17. PMID: 17264358.

Li's Key Points

- Asthma is the most common chronic condition among children.
- Approximately 13% of children in the US (9.4 million) have asthma.
- The objective of the study was to determine whether maternal exposure to high levels of magnetic fields (MFs) during pregnancy is associated with the risk of asthma in offspring.
- 130 children (20.8%) of the study participants developed asthma during 13 years of follow-up, with most cases (>80%) diagnosed by 5 years of age.
- Every 1-mG increase of maternal MF level during pregnancy was associated with a 15% increased rate of asthma in offspring.
- Children whose mothers had a high MF level (>2mG) had more than a 3.5-fold increased rate of asthma.
- Children whose mothers had a medium MF level (>0.3-2.0 mG) had a 74% increased rate of asthma.
- The presence of 2 risk factors (maternal history of asthma, and being a firstborn child) significantly exacerbated the adverse effect of maternal MF exposure in pregnancy on the risk of asthma in offspring.

To obtain a copy of the articles listed or to request a literature search on this topic please contact your Health Sciences Librarian.

Cont



What Your Patient Reads

Does prenatal exposure to magnetic-fields cause asthma?

Additional References from the Medical Literature

Blackman CF. Can EMF exposure during development leave an imprint later in life? *Electromagn Biol Med.* 2006;25(4):217-25. PMID: 17178582.

Mjøen G, et al. Paternal occupational exposure to radiofrequency electromagnetic fields and risk of adverse pregnancy outcome. *Eur J Epidemiol.* 2006;21(7):529-35. Epub 2006 Jul 21. PMID: 16858619.

De Wilde JP, Rivers AW, Price DL. A review of the current use of magnetic resonance imaging in pregnancy and safety implications for the fetus. *Prog Biophys Mol Biol.* 2005 Feb-Apr;87(2-3):335-53. Review. PubMed PMID: 15556670.

Juutilainen J. Developmental effects of extremely low frequency electric and magnetic fields. *Radiat Prot Dosimetry.* 2003;106(4):385-90. Review. PMID:14690283.

Celik O, Hascalik S. Effect of electromagnetic field emitted by cellular phones on fetal heart rate patterns. *Eur J Obstet Gynecol Reprod Biol.* 2004 Jan 15;112(1):55-6. PMID: 14687739.

Infante-Rivard C, Deadman JE. Maternal occupational exposure to extremely low frequency magnetic fields during pregnancy and childhood leukemia. *Epidemiology.* 2003 Jul;14(4):437-41. PMID: 12843769.

Koren G. Exposure to electromagnetic fields during pregnancy. *Can Fam Physician.* 2003 Feb;49:151, 153. PubMed PMID: 12619736; PubMed Central PMCID:PMC2214186.

Gever, J..Critics slam asthma risk, magnetic fields link. *MedPage Today*, August 08, 2011. <http://www.medpagetoday.com/Pediatrics/Asthma/27935>

Links For Your Patients

MedlinePlus: Fetal Exposure to Magnetic Fields From Appliances, Power Lines May Up Kids' Asthma Risk
http://www.nlm.nih.gov/medlineplus/news/fullstory_114885.html

Health Canada: Radiation Safety of Microwave Ovens
<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/micro-eng.php>

Health Canada: Safety of Cell Phones and Cell Phone Towers
<http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/cell-eng.php>

The above material was reviewed by health sciences librarians and is intended for informational purposes only. Permission is hereby granted to electronically copy and to print in hard copy "What Your Patient Reads" for in-house use or educational purposes only, provided it is not modified and the University of Manitoba Health Sciences Libraries is acknowledged and University of Manitoba logo is retained.