ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

Case Studies in Environmental Medicine

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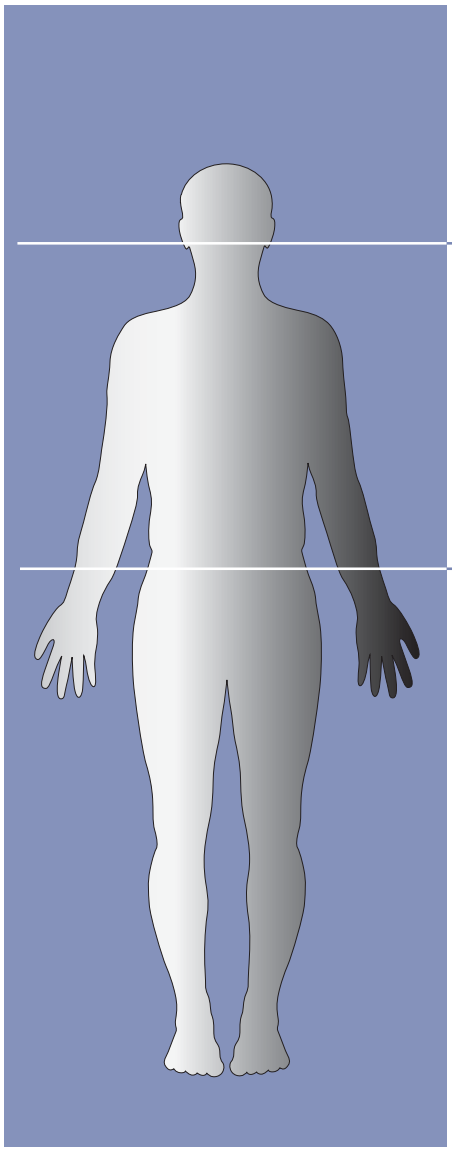

POLYCHLORINATED BIPHENYLS (PCB) TOXICITY

Environmental Alert

- PCBs cause cancer in animals and are probably carcinogenic in humans (group 2A classification, International Agency for Research on Cancer).
- Recent evidence suggests that PCBs might also have adverse reproductive, developmental, and endocrine effects.
- The manufacture of PCBs has been banned since 1977.
- The highest human exposures to these compounds occur via the consumption of contaminated fish and in certain occupational setting via contact with pre-1977 equipment.
- The most common signs of exposure to PCBs are chloracne and elevation of liver enzymes.

This monograph is one in a series of self-instructional publications designed to increase the primary care provider's knowledge of hazardous substances in the environment and to aid in the evaluation of potentially exposed patients. This course is also available on the ATSDR Web site, www.atsdr.cdc.gov/HEC/CSEM/. See page 3 for more information about continuing medical education credits, continuing nursing education units, and continuing education units.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Toxicology and Environmental Medicine

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Disclaimer

The state of knowledge regarding the treatment of patients potentially exposed to hazardous substances in the environment is constantly evolving and is often uncertain. In this monograph, ATSDR has made diligent effort to ensure the accuracy and currency of the information presented, but makes no claim that the document comprehensively addresses all possible situations related pediatrics and environmental health. This monograph is intended as a resource for pediatricians and other child health care providers in assessing the condition and managing the treatment of patients potentially exposed to hazardous substances. It is not, however, a substitute for the professional judgment of a health care provider. The document must be interpreted in light of specific information regarding the patient and in conjunction with other sources of authority.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry or the U.S. Department of Health and Human Services.

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Figures and Tables

Each content expert for this case study indicated no conflict of interest to disclose with the case study subject matter.

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Case Studies in Environmental Medicine (CSEM): PCB Toxicity

Goals and Objectives

The goals of this CSEM are to increase the knowledge of health care providers, especially pediatricians, of the special susceptibilities of children to hazardous substances in the environment and to aid in their evaluation of potentially exposed patients.

After completion of this educational activity, the reader should be able to discuss the major route of exposure for PCBs, describe two potential environmental and occupational sources of PCB exposure, give two reasons why PCBs are a health hazard, describe three factors contributing to PCB toxicity, identify evaluation and treatment protocols for persons exposed to PCBs, and list two sources of information on PCBs.

Accreditation

Continuing Medical Education (CME)

The Centers for Disease Control and Prevention (CDC) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. CDC designates this educational activity for a maximum of 1.0 hours in category 1 credit toward the American Medical Association (AMA) Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

Continuing Nursing Education (CNE)

This activity for 1.5 contact hours is provided by CDC, which is accredited as a provider of continuing education in nursing by the American Nurses Credentialing Center's Commission on Accreditation.

Continuing Education Units (CEU)

CDC has been approved as an Authorized Provider of continuing education and training programs by the International Association for Continuing Education and Training and awards 0.1 continuing education units (CEUs).

Instructions

See page 4

The questionnaire and posttest must be completed and returned electronically, by fax, or by mail for eligibility to receive continuing education credit.

Instructions for Completing CSEM Online

1. Read this CSEM, *Polychlorinated Biphenyl (PCB) Toxicity*; all answers are in the text.
2. Link to the MMWR/ATSDR Continuing Education General Information page (www.cdc.gov/atsdr/index.html).
3. Once you access this page, select the Continuing Education Opportunities link.
4. Once you access the MMWR/ATSDR site online system, select the electronic file and/or register and test for a particular ATSDR course.
   a. Under the heading "Register and Take Exam," click on the test type desired.
   b. If you have registered in this system before, please use the same login and password. This will ensure an accurate transcript.
   c. If you have not previously registered in this system, please provide the registration information requested. This allows accurate tracking for credit purposes. Please review the CDC Privacy Notice (www.cdc.gov/privacy.htm).
   d. Once you have logged in/registered, select the test and take the posttest.
5. Answer the questions presented. To receive continuing education credit, you must answer all of the questions. Some questions have more than one answer. Questions with more than one answer will instruct you to "indicate all that are true."
6. Complete the course evaluation and posttest no later than September 29, 2006.
7. You will be able to immediately print your continuing education certificate from your personal transcript.

Instructions for Completing CSEM On Paper

1. Read this CSEM, *Polychlorinated Biphenyl (PCB) Toxicity*; all answers are in the text.
2. Complete the evaluation questionnaire and posttest, including your name, mailing address, phone number, and e-mail address, if available.
3. Circle your answers to the questions. To receive your continuing education credit, you must answer all of the questions.
4. Sign and date the posttest.
5. Return the evaluation questionnaire and posttest, no later than September 1, 2006, to CDC by mail or fax:

Mail	**or**	**Fax**
Continuing Education Coordinator Division of Toxicology and Environmetnal Medicine, ATSDR 1600 Clifton Road, NE (MS F-32) Atlanta, GA 30333		770-488-4178 ATTN: Continuing Education Coordinator

6. You will receive an award certificate within 90 days of submitting your credit forms. No fees are charged for participating in this continuing education activity.

Case Study

A 48-year-old handyman has progressive cystic acne and abnormal liver function

A 48-year-old man that you are treating for acne vulgaris returns to your office for a follow-up appointment. You first saw this patient about 3 weeks ago. At that time, he had multiple acneform lesions in the malar and periorbital areas. Both cystic and comedonal lesions were present; most ranged between 3 and 6 millimeters (mm) in diameter, and some were edematous. The patient noted that he was surprised about the development of acne at his age: he never suffered from this condition during adolescence. He used over-the-counter astringents and antiacne medications, but they did not affect the lesions.

A review of the patient's medical history indicates that he has Gilbert syndrome and occasionally had elevated bilirubin levels in the past. However, the patient has no history of hepatitis, contact with hepatitis patients, other liver difficulties, or blood transfusion. There is no family history of cardiovascular disease or cancer. The patient does not smoke; he drinks 2 to 3 bottles of beer each evening, and sometimes more on weekends. He is taking no medications other than over-the-counter dermatologic medications.

The patient is married with three teenaged children; his wife and children are in good health. They live in a high-rise apartment building where the patient has been a handyman and part-time building manager for the last year. He spends a lot of time in the basement area, which includes a workshop, recreation room with pool table, and laundry and heating facilities. An avid fisherman, he spends most weekends fishing in Lake Michigan and eating his catch with his two sons.

At the end of the patient's previous visit, you prescribed a topical antibiotic and instructed the patient on its use. After reassuring the patient that stronger prescription medications are available for the treatment of acne, you ordered a serum biochemical and hematologic profile to document baseline values in the event that a course of Accutane (isotretinoin) therapy is warranted.

During today's physical examination, you note little or no improvement in the patient's acne. The ratio of cystic to comedome lesions seems to have increased, and many lesions appear to have become more edematous and erythematous. The patient has several new comedones on his chin, and he points out what appear to be developing areas of folliculitis on his chest and forearms.