

BIOMEDICINE

Pregnancy and drug abuse

Since the thalidomide tragedy of the early 1960s, an increasing number of drugs have come under surveillance as possible or probable threats to unborn children. Yet pregnant women are still downing a lot of drugs during pregnancy, according to a report in the Feb. 27 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.

Paul L. Doering and Ronald B. Stewart of the University of Florida in Gainesville monitored the drug consumption of 168 women during pregnancy. All women received at least two different drugs, 93.4 percent took five or more, while one patient ingested 32. The average number of drugs taken was 11. The medicines most commonly consumed, either because the women's doctors prescribed them, or because the women took them on their own, were iron, pain-relievers, vitamins, topical ointments, suppositories, douches, antacids, topical anti-infectives and cough and cold medicines, antimomiting remedies, barbiturates, antihistamines and illicit drugs.

Doering and Stewart are now using their data to see whether they can link the consumption of specific drugs during pregnancy with subsequent birth defects. Any associations they might pinpoint would be valuable, as the impact of many drugs on human fetuses is still unknown.

Tonsillectomies way overdone

"Doctor, Michelle had eight bouts of sore throats last year! Can't you take out her tonsils?" This type of plea from parents is the main reason why U.S. physicians perform about a million tonsillectomies each year. But is the operation really justified on this basis? Jack L. Paradise of the University of Pittsburgh School of Medicine and his team conducted a study to find out if it is.

They closely followed 65 children with histories of recurrent sore throats—at least seven episodes in one year, five in each of two consecutive years, or three in each of three consecutive years—and found that only 17 percent of the children were likely to display the same frequency of sore throats again. Thus, tonsillectomies on the basis of frequent sore throats don't seem to be justified for most children, the researchers conclude in the Feb. 23 *NEW ENGLAND JOURNAL OF MEDICINE*.

Is human leukemia infectious?

Although cat leukemia has been shown to be caused by a virus, this is not the case for human leukemia. Nonetheless, there is some evidence that human leukemia might be transmitted by an infectious agent. One study showed that 64 percent of leukemia patients had direct or indirect close contact with leukemia patients before the onset of their illness. Another investigation noted a clustering of leukemia among school children. Now a third study, reported in the Feb. 18 *LANCET* by Timo T. T. Timonen and Mirja Ilvonen of the University of Oulu in Finland, has found that a large number of adult leukemia patients had close contact before their illness with either leukemia patients or with hospital staff dealing with leukemia patients.

Specifically, 45 adult leukemia patients and 45 patients with other kinds of diseases at a Finnish hospital were asked about people they had come into close contact with before their illness. Eighteen (40 percent) of the leukemia patients, but only six (13 percent) of the controls, said they had had close contact with leukemia patients or hospital employees. Eight (18 percent) of the leukemia patients, but none of the controls, said they had had close contact with hospital staff working with leukemia patients. None of the hospital personnel had leukemia themselves, however, so they might possibly have transmitted a leukemia "bug" without getting sick themselves.

TECHNOLOGY

Criminals beware

A forensic technique to detect gunshot residue on hands, using a scanning electron microscope and an X-ray analyzer, has been developed by the Aerospace Corp. in Los Angeles. In tests using about 120 actual cases last year, it positively detected residue in 90 percent of those cases involving handguns and 50 percent of those involving long guns—more than three to five times the success rate of other techniques, such as neutron-activation or atomic-absorption analysis, Aerospace says.

The latter techniques offer only bulk elemental analyses, says Gerard Wolten, the Aerospace program manager. In the past this has been a problem because hands usually contain at least some environmentally deposited lead and barium. As gunshot residue begins to rub off, it becomes hard to distinguish from deposits by other sources.

In contrast, Aerospace uses a microscope to visualize actual particles as the X-ray analyzer determines the elemental content of each. Wolten says lead, antimony and barium particles from gunshot residue are distinguishable from similar elemental deposits by other sources once particle sizes and their characteristics are known.

Metal blocks coated with an adhesive are dabbed on hands suspected of bearing residue. Each sample takes more than an hour to process; samples from one hand take about half a day. The speed "is acceptable to city and county laboratories but too slow to handle the large workloads encountered by such labs as the FBI's," Wolten says.

Low-level radiation at home

Household use of water naturally high in radioactive radon may be exposing "significant" numbers of people to an increased risk of lung cancer, says Thomas F. Gesell and Howard M. Prichard of the University of Texas School of Public Health in Houston. "Radon concentrations considerably above 1,000 picocuries per liter do not appear to be at all uncommon in water supplies," they say.

Work they've recently completed indicates that household appliances, such as toilets, showers and dishwashers, liberate from 30 to 90 percent of the radon into the air. Small dwellings with a slow turnover of fresh air—a condition found to exist in many modern apartments—will build up the highest atmospheric radon concentrations, they say. Highest *exposures*, however, will result while occupants are engaged in water-consuming activities, such as bathing and operating the appliances.

Prichard is currently seeking to identify regions that use ground water high in radon; verify or refine models predicting indoor-air concentrations on the basis of water concentrations; develop "practical field techniques" for large air-concentration surveys, and identify exposed and control populations suitable for future epidemiological study.

Bioactive ceramic for teeth and bones

Sintered calcium-phosphate ceramics used as bone implants in laboratory animals interact with bone like a part of the body, according to researchers at the Battelle Institut in Frankfurt, Germany (part of the Battelle Memorial Institute). "They are tissue compatible and form an intimate bond with bone," Battelle says in its American newsletter. By making the ceramic porous enough, the bone can be induced to dissolve the ceramic so that it can be replaced by newly growing bone, Battelle says. Its bioactive ceramics have been used to plug and bridge bone defects, close surgical skull openings and to implant artificial-tooth roots that later bind to the jaw as bone tissue grows into the ceramic's pores.