

Biomedicine

AIDS in pregnancy, donors and tears

AIDS in women may be exacerbated by pregnancy, according to researchers at the Downstate Medical Center in Brooklyn. They followed the syndrome in three pregnant women who presumably got AIDS from intravenous drug use. The researchers found that the disease took its fatal course unusually quickly — all three died during their initial hospital admission for AIDS. Two women delivered their babies before dying; the babies are alive and AIDS free, says Howard Minkoff, one of the Downstate researchers.

It could be that the women's early AIDS symptoms were passed off as side effects of pregnancy so that they were not diagnosed until relatively late in the course of the disease. Or the slightly lowered immunity of pregnant women could have put up less of a fight against it, suggests Minkoff. Details of the cases will be reported soon in *OBSTETRICS AND GYNECOLOGY*.

Elsewhere on the AIDS front, the Atlanta-based Centers for Disease Control (CDC) recommends in the Sept. 6 *MORBIDITY AND MORTALITY WEEKLY REPORT* that men who have had even a single homosexual experience since 1977 refrain from giving blood. While the newly instituted AIDS blood screens (SN: 8/10/85, p. 84) are "highly sensitive and specific," self-deferral of potential virus carriers "provides additional safety," the CDC reports.

The recommendation was prompted by the high proportion among antibody-positive people of men who have had homosexual experiences but do not consider themselves homosexual, according to Harold W. Jaffe of the CDC.

And finally, researchers from the National Institutes of Health in Bethesda, Md., have officially reported their isolation of the AIDS virus from tears of a patient with AIDS. While casual contact with AIDS patients' tears has not been associated with the syndrome, "direct contact with the tears of AIDS patients, including contact during routine ophthalmologic procedures, should be minimized," they recommend in the Sept. 7 *LANCET*.

Jaws of a different color?

Just when you thought it was safe to go back in the water comes a study showing a greater incidence of illness among swimmers than nonswimmers.

Patricia L. Seyfried and her colleagues at the University of Toronto queried more than 8,000 people at 10 beaches in the Lake Huron-Lake Ontario area about their current health status and whether they had swum in the past four days or were planning to swim that day. The researchers phoned each person seven to 10 days later to inquire about their health. The analysis of the 4,537 replies showed an illness rate of 69.6 per 1,000 swimmers, while among nonswimmers the rate was only 29.5 per 1,000.

But that doesn't mean fear of swimming is justified, Seyfried says. "The health benefits of swimming far outweigh any health risks. The types of illness we saw weren't health risks."

The illnesses in order of prevalence were respiratory, gastrointestinal, eye, ear and skin infections, tailed by allergic reactions.

At the time of the initial survey, the researchers measured the levels of different types of bacteria in the water, and found the incidence of illness corresponded most closely to the level of staphylococcus and intestinal bacteria, and less closely to several other types of bacteria. The source, they say, is sewage as well as respiratory and gastrointestinal pathogens shed by bathers; still water, low rainfall and crowded beaches exacerbate the problem.

Previous studies of ocean beaches have linked illness to waterborne bacteria; the current study, says Martin S. Favero of the Centers of Disease Control in an accompanying editorial, extends the connection to freshwater areas.

SEPTEMBER 21, 1985

Chemistry

Janet Raloff reports from Chicago at the American Chemical Society's 190th national meeting

Soft water and heart disease

A new study strengthens the apparent link between water softness and risk of cardiovascular disease. Researchers in the Health Effects and Epidemiology Section at Oak Ridge (Tenn.) National Laboratory compared the well water of 505 Wisconsin farmers, aged 35 to 80, who died from heart attack or stroke, with the well water of 854 living Wisconsin farmers who show no clinical evidence of heart disease.

Magnesium and calcium largely determine water "hardness" — the higher their concentrations, the harder the water. An analysis of several variables, including mineral content and pH, showed the strongest association between water softness and heart disease risk in persons whose water contained low levels of calcium, according to group leader Elaine Zeighami. In other words, she says, "soft water does seem to imply greater risk." But that observation applies only to naturally soft water, she adds. Her data suggest that artificial water softening at the tap, using salt, does not contribute to risk.

Not only was the relationship between soft water and heart disease risk "moderately strong" among the relatively homogeneous population Zeighami studied, but it increased in strength as the hardness of the water decreased. For example, there was a 30 percent increased risk of heart attacks among those drinking water containing 25 parts per million (ppm) calcium as compared with those whose water had 75 ppm; however, the data suggest there would be an 80 percent higher risk of heart attacks among those whose water had no calcium, when compared with those whose had 50 ppm.

Fungi prefer UV-treated diet

Wood and crop wastes could yield industrial chemicals, a rich protein supplement for animals or an enzyme that breaks down cellulose. First, however, the plant wastes must be decomposed. A novel approach being studied at the State University of Campinas in Brazil involves irradiating the wastes with ultraviolet light (UV) and then feeding them to fungi newly isolated from the gut of a wood-eating insect.

Chemist Nelson Durán has found that the fungus *Neurospora sitophila* (TCB strain) thrives on lignin and cellulose — two important structural components of wood. It will also dine on rice straw. But when this fungal fare is pretreated with ultraviolet light irradiation for 1 to 12 hours, the fungi feast — and multiply — more rapidly.

For lignin, a 1-hour UV pretreatment with a mercury-vapor lamp (emitting a range of spectra at either 254 nanometers and higher or 300 nanometers and higher) doubled the 10-day growth recorded for fungi dining on untreated material. Similar growth increases occurred with 6- or 12-hour pretreatments of cellulose, although for this material the lower spectral range appeared to make the diet more palatable. But irradiating rice straw for an hour brought the biggest gain — an eightfold increase in fungal growth over untreated straw.

Durán's analysis of lignin shows that the UV pretreatment initiates in the material's structure a chemical breakdown that is quite similar to the enzyme-activated degradation brought about by chemicals like ozone, chlorite or hydrogen peroxide. However, the fungi apparently see a difference in the UV-treated meal's digestibility: Their growth on UV-treated rice straw was 20 to 40 percent higher than when their straw had been chemically treated.

Durán says the fungi could be harvested as a protein supplement for animal fodder. Alternatively, they could be used as little biological generators of cellulase, an enzyme that breaks down cellulose. It's even possible that the ultraviolet breakdown of lignin will yield an economical source of industrial chemicals such as acids and phenols, he says; that's what he's exploring now.

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