Behavior

Look Mom, less risk

Some babies are "at-risk." They have poor reflexes, orient slowly to visual, auditory and tactile stimuli and withdraw when separated from their mothers for a short time. These individuals, who have problems adapting to new situations throughout their lives, also possess elevated heart rates and a surfeit of cortisol, a stress-related hormone.

The babies in question are rhesus monkeys, and it appears that a highly nurturing, attentive mother can bring them out of their shells and encourage normal exploration and play behavior. "It seems that the behavior of at-risk animals can be modified over the first year of life by a highly nurturant mother," said psychologist Stephen J. Suomi at a National Institute of Mental Health conference last week. The findings are preliminary, he cautions, but an extensive study is in the works.

Suomi, who directs the rhesus research at a federal facility in Poolesville, Md. (SN: 6/16/84, p. 375), reports that six monkey infants have been followed through their first year. Three were at high risk for later adaptation problems and three were tagged as low-risk babies. Each was placed with either a nurturing mother or a less attentive, more punitive mother. At 6 months of age, a high-risk monkey being raised by a nurturing mother displayed virtually normal exploratory and play behavior, points out Suomi. When the 6-month-old animal was separated from the mother for several four-day periods, it quickly withdrew and showed marked increases in cortisol. The infant returned to normal two months after being reunited with the mother.

When introduced into a peer group at 10 months of age, the same at-risk monkey was withdrawn and kept to itself. But again, after about two months it interacted normally, says Suomi.

Data concerning the other five infants are still being analyzed, he adds. It may be difficult, however, to study high-risk infants raised by a more punitive mother. "Within the first week of life, these mothers seem to know which infants are at-risk," explains Suomi. "They won't adopt [at-risk babies] or have much to do with them."

Good news about bad news

"Cancer." The very mention of the word evokes disturbing feelings and images. Cancer patients and their families undergo tremendous psychological trauma, and informing someone that they may develop cancer can trigger a variety of stress-induced problems.

But researchers at the Medical College of Georgia in Augusta report that workers who are notified that they have been exposed to a cancer-causing chemical may not experience significant emotional trauma. J. Larry Hornsby and co-workers randomly selected 140 workers exposed to a chemical associated with bladder cancer. Several tests of emotional and family functioning were completed by each subject within four weeks of an initial medical screening at which they learned of the risk, and six months later. The workers, who were mostly black males with a high school education or less, showed no evidence of family disruption or psychological trauma, conclude the investigators in the April 5 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. In this sample, at least, learning about a cancer risk did not seem to create enduring or severe stress.

This finding bolsters efforts to inform other segments of the population about the dangers of environmental pollutants, writes Mardi Horowitz of the University of California at San Francisco in the same issue. Nevertheless, there are some people who experience persisting distress after such news, he adds. Being told of a health risk may add to "preexisting fears, special sensitivities or personal preoccupations" and result in an unusually high level of distress, he says. Persisting distress is often signaled, notes Horowitz, by ruminations over the bad news, extended periods of mild depression and sleep disruptions.

Biomedicine

Joanne Silberner reports from the American Cancer Society's science writers' seminar in San Diego

Timing key in cancer chemotherapy

The body is a symphony of rhythms—the rate of cell division, the timing of hormone production and the patterns of brain waves all change throughout the day and night. Cancer chemotherapy can be made more effective by taking the body's timing into account, says William J. M. Hrushesky of the University of Minnesota in Minneapolis.

At the San Diego seminar and in the April 5 SCIENCE, Hrushesky reported that the timing of a two-drug sequence in women with advanced ovarian cancer markedly affects the onset of complications. The women were given adriamycin and cisplatin, two powerful anticancer drugs that can alter blood cell counts, permit infection and cause bleeding and anemia.

Hrushesky tried 26 women on both a 6 a.m. adriamycin, 6 p.m. cisplatin schedule and a 6 a.m. cisplatin, 6 p.m. adriamycin schedule. Twenty of the women had complications on the second schedule, compared with 11 on the first; the results echo rodent studies that show adriamycin is most toxic late in a rat's "activity cycle" and cisplatin is most toxic around the time of awakening.

The body's rhythmicity can also be used to monitor adverse reactions to chemotherapy. Hrushesky has found that a disturbance in the normal rhythmic pattern between breathing and heartbeat can be used as an early indication of heart cell death and may prove useful as a clinical screening test for toxic effects of chemotherapy.

Hyperthermia for cancer: Warming up

Hippocrates said, "Give me the power to produce fever and I will cure all disease." Cancer specialists have been trying to figure out how to wipe out cancer with heat (SN: 8/30/80, p. 141), using methods ranging from a single electrode that heats a tumor via radiofrequency to warming the patient's blood or immersing the patient in hot water or wax.

H. Ian Robins of the University of Wisconsin in Madison has been using a modified food-warming oven to radiantly heat patients. He's raised the body temperatures of 30 patients with various forms of cancer 160 times to 41.8°C (107.4°F) for up to three hours. An initial safety trial on 12 patients showed the process is safe for cancer victims with healthy hearts; some of the patients even benefited from the procedure. "This opens the door for combined studies of hyperthermia with radiation, chemotherapy or interferon," he says. In a more recent efficacy trial, four patients with nodular lymphoma showed a positive response to a combination of irradiation and the whole-body warming technique.

In the procedure, patients are wrapped in blankets and put into the heating devices for about an hour; they remain warm for two hours after that.

The advantage of whole-body hyperthermia, says Robins, is that it gets at disseminated cancer. The process also boosts the beneficial effects of both chemotherapy and radiation, he says.

Oncogenes and cancer aggressiveness

The fate of children with neuroblastoma, a cancer of the nervous system, can be gauged by looking at how many copies of the responsible oncogene, or cancer-causing gene, are present in their tumor cells, says Garrett M. Brodeur of Washington University in St. Louis. Collaborating with laboratories across the United States, Brodeur found that 68 percent of children whose tumor cells had only one copy of the oncogone were likely to have been spared disease progression after 18 months. This compared with a 30 percent figure in children with three to 10 copies and no children with more than 10 copies. The presence of mutiple gene copies may somehow increase the aggressiveness of the tumor, he says.

Science Service, Inc. is collaborating with JSTOR to digitize, preserve, and extend access to *Science News*. www.jstor.org