

## Ovarian cancer: Homing in on the true risks

One in 70 U.S. women will develop ovarian cancer, and more than 60 percent of them will die of their malignancy within five years of diagnosis. Clinicians have observed that childbearing and use of oral contraceptives tend to lower a woman's risk of this generally silent killer, while infertility and age have been linked to increased risk.

Now new analyses substantially revise that list of risks and previously tendered explanations of the cancer's likely biological cause.

The new findings could have important public health implications, asserts Carolyn L. Westhoff, an epidemiologist at Columbia University in New York City who is familiar with the analyses.

For instance, she points out, 80 percent of American women now take birth-control pills for an average of four years — usually by age 30. That suggests, Westhoff says, that “we could get rid of half of this disease simply because women take the pill.” Moreover, she argues, one newly identified possible risk — drugs that trigger ovulation — “is a big enough deal to recommend against egg donation by healthy women” to infertile women. Until now, Westhoff notes, many physicians viewed these fertility-enhancing drugs much like vitamins: “They might help; can't hurt.”

Alice S. Whittemore, an epidemiologist at the Stanford University School of Medicine, headed a team of researchers from 14 medical institutions who reviewed ovarian cancer data from 12 previous studies. Their series of four papers in the just released Nov. 15 *AMERICAN JOURNAL OF EPIDEMIOLOGY* examines ovarian cancer risk factors among the studies' 6,500 white subjects — roughly one-third of whom had the cancer. In the Jan. 20 *JOURNAL OF THE NATIONAL CANCER INSTITUTE*, a fifth paper by the group focuses on the ovarian cancer risk among a much smaller group of black women who had taken part in seven of the studies.

Overall, Whittemore notes, her group's statistical review using meta-analysis turned up several new findings. Though physicians had known for some time that childbearing reduces ovarian cancer risk, the new study suggests that this protection is not just some fixed amount associated with reproduction. Rather, the birth of each successive child further reduces a mother's ovarian cancer risk, typically by 14 percent. Moreover, the larger analysis of white women showed, failed pregnancies — miscarriages, elective abortions, and stillbirths — also protect. Indeed, Whittemore told *SCIENCE NEWS*, per month of gestation, failed and successful pregnancies “seem to offer similar protection.”

The analyses also found no increased risk linked to infertility per se. However,

Whittemore said the apparent 27 times greater than expected incidence of ovarian cancer observed among white women taking drugs to enhance fertility came as “quite a surprise.” While the actual risk figure may not be reliable, owing to the small number of women involved, the disturbing trend not only appears reliable, she notes, but also biologically plausible. Previous studies have indicated that excessive ovulation or high levels of the hormones that trigger ovulation may foster ovarian cancer. Fertility drugs increase both.

In fact, Whittemore notes, her group for

## Baboons offer glimpses of left-brain brawn

Look at the letter “S” in the *SCIENCE NEWS* logo on the cover and manipulate the image in your mind's eye. Rotate it to various angles and you still recognize the letter, without confusing “S” with its mirror image. Researchers have generally considered this a uniquely human ability that depends on the specialized functions of the brain's left and right sides.

But a new study finds that baboons can mentally rotate images and still recognize them, the first such demonstration in a nonhuman species. And thanks to an experimental procedure that delivers visual information to one side of the brain or the other, the researchers also conclude that the baboon's left hemisphere orchestrates this accomplishment.

“Our data clearly challenge the theory that only humans have brain hemispheres that evolved to serve different functions,” contends psychologist William D. Hopkins of Emory University in Atlanta. He and his collaborators — French psychologists Jacques Vauclair and Joël Fagot, both of the National Scientific Research Center in Marseilles — will present their results in the *March PSYCHOLOGICAL SCIENCE*.

Their paper comes on the heels of growing evidence that monkeys and other nonhuman primates favor one hand over the other for particular tasks, an indirect sign that their brain hemispheres perform specialized functions (*SN*: 1/7/89, p.10). Right-brain superiority in identifying faces has emerged among “split-brain” monkeys, but it remains unclear whether surgically cutting off communication between hemispheres alters other aspects of brain function.

Hopkins and his co-workers employed a technique developed in the late 1980s and first used in human studies. Its extension to nonhuman primates represents “a breakthrough for animal cognition researchers,” asserts psychologist Jeannette P. Ward of Memphis (Tenn.) State University.

Six baboons and three humans learned

the first time neatly ties ovarian cancer risk to *both* high rates of ovulation and ovary-stimulating hormones.

The two findings that a woman's age at menopause did not affect her cancer risk and that oral-contraceptive use offered less protection in younger women were “the first thing that struck me as being of fundamental importance,” adds Malcolm C. Pike of the University of Southern California School of Medicine in Los Angeles.

Why? It argues against ovulation as being the sole cause of this cancer. Pike says it also suggests that newer birth-control pills, which stop ovulation but don't lower levels of ovary-stimulating hormones, may prove far less effective than early pills in cutting ovarian cancer rates. — *J. Raloff*

to control a cursor on a computer screen with a joystick and to align it with a fixation point in the center of the screen. They then saw either the “sample” letter “F” or “P” flash to the left or right of the square for about one-tenth of a second.

For both humans and monkeys, if a letter or other stimulus appears to the left of a fixation point for a period faster than the one-fifth of a second needed for the eyes to focus on the stimulus, it enters only the left visual field and gets processed only by the right hemisphere. Speedy presentation to the right of the fixation point delivers a stimulus to the left hemisphere via the right visual field.

Next, two “comparison” letters flashed for one-tenth of a second just above and below the center square; one was the original letter, the other its reversed image. Baboons moved the cursor to the position of the comparison letter that they thought matched the sample letter and received food pellets for correct answers. On a series of trials, comparison letters were tilted at progressively sharper angles, thus requiring mental rotation for a correct response.

Baboons proved highly accurate at the task only after left-brain exposures to letters. Human volunteers did well with both hemispheres, but prior studies with larger samples have found a left-brain advantage for mental rotation of meaningful symbols such as letters, Hopkins notes. Both humans and baboons took longer to respond as comparison letters departed more sharply from the sample position.

Overall, baboons performed mental rotations more than twice as fast as humans. Baboons treated the letters as meaningless shapes, whereas humans may have engaged in more laborious processing of both meaning and shape, Hopkins suggests.

His group plans to study hemispheric function among chimpanzees and other monkey species by facing them with the same mental rotation tasks. — *B. Bower*