

Mom's blood reveals baby's hemorrhage risk

Clinicians have developed an improved means for evaluating a pregnant woman's risk of delivering a baby with a potentially fatal bleeding disorder. Reliably determining which pregnant women face a low risk of carrying such babies could also prevent thousands of unnecessary caesarean sections annually.

An estimated 7.6 percent of all pregnant women have reduced numbers of blood platelets, cell fragments that facilitate clotting. Most of these women have developed a benign pregnancy-related disorder of unknown origin. But some suffer from a serious autoimmune disease, immune thrombocytopenic purpura (ITP). The antibodies of its victims mistakenly destroy blood platelets. The antibodies can also wipe out many of these important clotting agents from a developing child.

Infants born with a severe deficiency of platelets can develop massive brain hemorrhages during the first few weeks after

birth. This is especially true of infants delivered naturally, since the birth canal compresses a baby's head. To limit an infant's risk of potentially fatal bleeding, some obstetricians have advised all patients with low platelet counts to schedule caesarean deliveries.

But previous research hinted that infants of women with the benign low-platelet disorder run no such risk. Philip Samuels and his co-workers at the University of Pennsylvania School of Medicine in Philadelphia and colleagues now confirm that observation. They also report identifying a means for detecting those pregnant women who pose a hemorrhage threat to their newborns.

Between 1979 and 1989, the researchers studied 162 pregnant women with lower-than-average platelet counts — less than 150,000 platelets per cubic millimeter of blood. Though 88 women had been diagnosed with ITP prior to pregnancy, the rest had no history of abnormal bleeding

or signs of ITP. Among the 88 women with obvious ITP, 18 delivered babies with dangerously low blood-platelet levels. By contrast, children born to the 74 women who appeared only to have the benign pregnancy-related platelet abnormality faced no risk of severe hemorrhage, the team reports in the July 26 *NEW ENGLAND JOURNAL OF MEDICINE*.

"Unless the mother has a known history of ITP, one doesn't need to worry about the fetus and one doesn't need to perform a caesarean section," Richard H. Aster, a hematologist at the Medical College of Wisconsin in Milwaukee told *SCIENCE NEWS*. Aster wrote an editorial accompanying the research report.

Furthermore, the researchers found that among pregnant women with a history of abnormal bleeding, testing for the ITP antibodies could help determine whether they also pose a hemorrhage risk to their child at birth. Women with ITP whose blood carried no detectable levels of the platelet-destroying antibodies delivered children with sufficient platelet levels to prevent massive bleeding, they report. However, the researchers say the test's predictive power needs confirmation before physicians can rely on it to assess the safety of natural deliveries among these women. — *K.A. Fackelmann*

Hubble's flaws: Looking for the source

Only "three or four" NASA inspectors oversaw the Hubble Space Telescope's optical system during construction, former NASA administrator James Beggs told Congress last week. "We would normally have had many more people in the plant," but management problems, budget cuts and a Department of Defense directive all conspired to limit NASA's inspection force, he said.

Testifying before the Senate appropriations subcommittee that oversees NASA spending, Beggs acknowledged that the limited number of inspectors could "have had some impact" on NASA's failure to prevent or detect a serious flaw in one of Hubble's two mirrors (*SN*: 7/7/90, p.4).

Efforts to reduce cost overruns, as well as the necessity of dividing NASA's inspection work force between two main contractors may have hampered the agency's efforts to properly inspect Hubble's mirrors, Beggs said. But seriously compounding these problems, Beggs said, was the military's request that NASA limit its personnel at the optics contractor in Danbury, Conn. — Perkin-Elmer Corp., now Hughes-Danbury Optical Systems, Inc. — because of classified U.S. defense projects the company handled.

A 1983 investigation by the House Appropriations Committee bolsters Beggs' assertions. It found that because the military "wished to limit the number of NASA personnel 'penetrating' contractors who were working on classified projects," NASA established an initial "cap" of 90 people for the Space

Telescope program — less than half the number the agency usually allocates for large projects. After that cap was lifted in 1979, NASA's Hubble staff grew to exceed 200. However, the congressional investigators concluded, "NASA was slow in reaching this level, and inadequate contractor monitoring resulted."

Roger Angel, a telescope-mirror designer at the University of Arizona in Tucson, and member of a panel appointed by NASA to investigate Hubble's troubles, is concerned the flawed mirror may have escaped detection "not so much because of a lack of people, but because of a lack of information flow." On his panel's visit to Hubble's mirror maker, Angel plans to compare data from several tests made with either of two "null" lenses, used to help detect mirror imperfections (*SN*: 7/21/90, p.39). Because the two null lenses have different optical properties, Angel told *SCIENCE NEWS* it was "unlikely" that each could have been mistakenly constructed so they both missed the mirror defect. But he adds that the company may not have compared final measurements taken with one of the null lenses to those obtained using the other.

Efforts to pinpoint technical and procedural errors "is not a witch hunt," according to William G. Fastie, an astronomer with Johns Hopkins University in Baltimore. Says Fastie, involved with a NASA working group formed in 1977 to oversee Hubble's construction, "If we can detect the problem, we can design the most accurate method to correct the flaw." — *R. Cowen*

Clues emerge to how brain reads, spells

After suffering extensive stroke-induced damage to the central portion of her brain's left side, a 77-year-old woman had trouble identifying the latter half of words. Her problem, investigated by a pair of researchers in Baltimore, has yielded some intriguing clues to the way the brain ordinarily recognizes a string of letters as a word.

The woman, referred to as N.G., could easily read the left sides of written words, regardless of their lengths. Though her vision and muscle control remained unaffected by the stroke, this woman consistently misidentified the right halves of the same words, even though she could name all their letters. N.G. also misread the right halves of almost all words presented vertically, rather than left-to-right. The same pattern held for forward and backward spelling, whether written or spoken.

Other researchers have observed that patients with damage on the left side of their brain may have difficulty recognizing objects that appear on the right side of the visual field, and vice versa. Neurologists call this disorder "unilateral neglect." But N.G. is the first to show deficits focused on the same end of a word, no matter which side of the visual field that half of the word is presented in, note Alfonso Caramazza of Johns Hopkins University and Argye E. Hillis of Health-