

More stress disorder for wounded Viet vets

Severe trauma can trigger a number of reactions, such as recurring nightmares, sudden flashbacks and emotional numbing. In 1980, such reactions were combined into an official psychiatric diagnosis, post-traumatic stress disorder. A rare survey of the disorder in the general population now indicates that it is uncommon, except among wounded Vietnam veterans.

Current or previous symptoms meeting the criteria for post-traumatic stress disorder were reported by just 1 percent of the random sample of 2,493 St. Louis residents, say psychiatrist John E. Helzer of Washington University School of Medicine in St. Louis and his colleagues. Among Vietnam veterans who were not wounded and civilians exposed to physical attack, including rape, about 3.5 percent suffered the disorder, compared with 20 percent of veterans wounded in Vietnam.

People subjected to sudden and severe stress are considered to have post-traumatic stress disorder if they reenact the experience through dreams, thoughts or flashbacks and if they display emotional numbing and detachment. They must also show at least two of the following symptoms: jumpiness, trouble sleeping, guilt about surviving, trouble concentrating, avoidance of situations that stir memories of the trauma and worsening of symptoms in situations that resemble it.

Although the full-blown diagnosis was unusual, 15 percent of the men and 16 percent of the women interviewed experienced some of the above symptoms — usually one or two — after a trauma, report the researchers in the Dec. 24 *NEW ENGLAND JOURNAL OF MEDICINE*. Traumas, which also included experiencing serious accidents, seeing someone hurt or die and surviving a threat or close call, resulted most often in nightmares, jumpiness and trouble sleeping.

For about half of those with post-traumatic stress disorder, symptoms lasted fewer than six months. However, in about one-third of the cases, symptoms persisted for more than three years. The traumas that produced the longest-lasting symptoms were Vietnam combat among men and physical attack among women.

Not surprisingly, a history of at least four behavioral problems before age 15, including stealing, vandalism, substance abuse and school expulsion, was more common among those with post-traumatic stress disorder. But the researchers also found that subjects with childhood behavior problems were more likely to have been beaten or mugged in the 18 months before the study and more likely to have been in combat if they went to Vietnam. The nature of a "personality predisposition" to experiencing traumas

is poorly understood, they say.

Although veterans of other wars were in the sample, add the researchers, it is unclear why combat-related symptoms were reported only by Vietnam veterans. Furthermore, the number of Vietnam veterans in the study was small, totaling 64, as was the number of persons who had experienced natural disasters. Thus, the investigators consider the survey to be a preliminary estimate of how common post-traumatic stress disorder is in the general population.

A related study in the December *ARCHIVES OF GENERAL PSYCHIATRY* provides evidence that post-traumatic stress disorder can occur among school-age children within weeks of a life-threatening event. One month after a sniper attack on an elementary school playground, during which one child and a passerby were killed, 13 children were injured and many others were pinned on the playground or

in classrooms under gunfire, researchers interviewed 159 youngsters, representing about 15 percent of the student body.

As exposure to the sniper attack increased, so did the number of post-traumatic stress symptoms described by the children. Severe or moderate post-traumatic stress disorder was experienced by three-quarters of those on the playground during the attack and two-thirds of those in the school building. Most of the children who had left school or were on vacation (the school is on a year-round schedule) had mild symptoms or none at all. Age, sex and race did not influence the type or severity of symptoms reported, say psychiatrist Robert S. Pynoos of the University of California at Los Angeles and his colleagues.

The children at the school are black and Hispanic and live in the inner city, where crime and violence are ever-present, note the researchers. It remains to be seen whether their severe stress symptoms persist.

— B. Bower

Early HIV effects on nervous system found

In 1985, when scientists isolated the AIDS-causing human immunodeficiency virus (HIV) in brain tissue and spinal fluid, they realized that the virus directly affected the nervous system as well as the immune system.

But a new study is providing some of the first clues about when HIV begins to affect the nervous system, causing dementia and other impairments. The answer may mean earlier detection and treatment of HIV-infected individuals.

The study, which is the first to detect neurological impairment at various stages of HIV infection, appears in the December *ANNALS OF INTERNAL MEDICINE*. After giving neurological and psychological tests to a group of 55 homosexual men, Igor Grant and his colleagues at the University of California and Veterans Administration Hospital in San Diego evaluated the subjects' mental abilities and found that HIV appears to have an early impact on the nervous system. In the group with fully developed AIDS, the impairment rate was 87 percent; AIDS-related complex (ARC), 54 percent; HIV positive, 44 percent; and HIV negative (controls), 9 percent.

"HIV may affect brain function early on in infection, but it's premature to make any conclusions from this study," Grant told *SCIENCE NEWS*.

Other scientists agree with Grant's caution and add that larger longitudinal studies with better controls need to be done.

"In the Grant study, we don't know how long they [the neurologically impaired but asymptomatic subjects] were infected with HIV and how far away they are from ARC," says Richard Johnson, a neu-

ropsychiatric investigator for the Multi-center AIDS Cohort Study (MACS), which involves 5,000 homosexual men in Baltimore, Pittsburgh, Chicago and Los Angeles who were tested for HIV two years ago but who had not developed ARC or AIDS at that time.

At the centers, investigators are monitoring the neurological and psychological characteristics of those who have tested positive for HIV since entering the program. This will help determine when HIV first affects the nervous system and also the effect's prevalence at each stage of infection.

Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases (NIAID) in Bethesda, Md., says Grant's study is valid, but better controls are needed. "Psychiatrists have said the anxiety of knowing you're positive for HIV may cause neurological abnormalities, so correct controls would be people who have stress, such as cancer patients."

In a similar sense, some MACS participants who have elected not to know their HIV status are acting as controls, says Johnson, of the Johns Hopkins School of Medicine in Baltimore.

Grant says one implication of his study is that physicians should know that HIV may cause neurological problems in otherwise healthy patients. "The physician's index of suspicion must be moved up a notch," Grant says.

In addition, knowing the stage of HIV's impact on the nervous system is important because scientists want to know when to begin therapy with drugs such as zidovudine, which is the only AIDS drug commercially available. But they first must know whether early intervention

would be beneficial. The NIAID and zidovudine's manufacturer, Burroughs Wellcome, have set up a study of 1,600 asymptomatic, HIV-positive people to determine the drug's effect.

Because of HIV's apparent effect on the nervous system, U.S. Navy Surgeon General J.A. Zimble in July recommended reassigning flight-crew personnel who test positive for HIV. His recommendation was based on earlier studies that suggested a tie between HIV and neurological problems but that did not specify at what stage of the infection this would occur.

— S. Eisenberg

Putting the radwaste eggs in one basket

The effort to dispose permanently of high-level radioactive waste is now focused on one site: Nevada's Yucca Mountain. Late last month, Congress scrapped its original, competitive, scientific site-selection procedure, established in 1982, which pitted potential repository locations in several states against one another (SN: 1/1/83, p.6), in favor of a new plan that targets the Nevada site.

"I think it's fair to say we've solved the nuclear-waste problem with this legislation," says Sen. J. Bennett Johnston (D-La.), who was instrumental in pushing the legislation through Congress as part of a compromise budget measure. "The problem with nuclear waste has never been scientific," says Johnston, whose state had been considered as a potential site early in the selection process. "It's always been emotional and political." The strongest objections to the bill came from Nevada's representatives, who warned that the fight is far from over.

The new plan calls for the start of geological tests and exploratory drilling at Yucca Mountain as soon as possible. It suspends activities at sites in Texas and Washington state and halts the search for a potential repository location in the eastern United States (SN: 8/1/87, p.73). The legislation also shelves plans to build a temporary nuclear-waste storage facility near Oak Ridge, Tenn. (SN: 2/14/87, p.106).

However, the legislation does not specify what will happen if the Nevada site turns out to be geologically unsuitable for the location of an underground repository. Nevada officials have argued that Yucca Mountain lies in an area that may be vulnerable to earthquakes and volcanic activity.

The measure also doesn't set a firm timetable for constructing the nation's first nuclear dump. Department of Energy officials say that even if the Nevada site turns out to be acceptable, construction could not begin until 1998 at the earliest, and the repository wouldn't be completed until 2003.

— I. Peterson

Celestial sandpaper: Grit from the stars

Silicon carbide manufactured in an electric furnace by heating sand in the presence of carbon is a tough, hard material often used for making sandpaper. The first laboratory evidence that the same material may also be created within gases ejected by carbon-rich stars has been found in microscopic silicon carbide grains recently isolated from a primitive meteorite.

The discovery of these grains by Edward Anders of the University of Chicago and his colleagues marks the first time that scientists have been able to examine samples of stellar silicon carbide in the laboratory. Astronomers had previously detected the compound's spectral signature in dust surrounding distant stars.

"People had predicted silicon carbide would be present," says Anders. "But seeing it from afar as dust grains in a star spectrum isn't the same as analyzing it in the lab and seeing . . . what sort of story it tells." The researchers report their findings in two papers in the Dec. 24 NATURE.

Anders and his group isolated the silicon carbide grains, each one a micron or less across, by gradually dissolving away the rest of the meteorite sample. A similar technique applied earlier had resulted in the detection of tiny diamond crystals within the same meteorite (SN:

3/14/87, p.166).

The resistance of both diamond and silicon carbide to chemical attack means that the grains have survived largely intact over time periods longer than the age of the solar system. Their presence—as messengers from a distant past—suggests how solid materials may form within a gas cloud shed by a star.

The researchers found that the silicon carbide grains contain an unusual combination of carbon and silicon isotopes. They conclude that initially the carbon and silicon atoms were probably created separately by different stars at different stages in their life cycles. In other words, more than one star may have contributed to the formation of silicon carbide. At a later stage, a nova explosion may have driven the atoms together to create the grains present in a meteorite.

Exactly how the silicon carbide and diamond grains were produced in gas clouds is open to debate. "When one goes to an unusual environment that is not really common on earth," says Anders, "one has to consider factors that one normally ignores on earth." Adding to the puzzle, Anders and his group have recently found meteorite diamonds that are large enough to be visible in an optical microscope.

— I. Peterson

Shuttle flight delayed

The space shuttle's return to flight has been postponed from NASA's June 2 launch date, following the discovery that one of the newly designed parts of the solid rocket boosters had failed during a test-firing on Dec. 23. The test, held at contractor Morton Thiokol's facility near Brigham City, Utah, had appeared successful. But engineers subsequently found a piece missing from a carbon-phenolic composite ring designed to hold a flexible "boot" that protected the rocket nozzle's mounting from exhaust gases.

NASA officials said this week that it would take several days to assess the length of the delay but that the launching would be forestalled by at least several weeks, and some speculation ran as high as several months. An interim version of the redesigned boot worked successfully during the rocket motor's first full-scale test-firing in August (SN: 9/5/87, p.151), but the version that failed last week, said a NASA official, had never been in a test-firing at all. The failure of the boot ring, said NASA, had no connection with the O-ring seals between the segments of the booster's casing, whose failure has been blamed for the Jan. 28, 1986, explosion of the shuttle Challenger. □

326 days in space

Soviet cosmonaut Yuri Romanenko's 326 days aboard the Mir space station, a sojourn that ended when he returned to earth Dec. 29 (along with two colleagues completing shorter stays), may have meant more than just a new record for time spent in space by a human being. According to Houston engineer James Oberg, a long-time watcher of the Soviet space program, Romanenko's lengthy stay may mean that Soviet medical researchers have finally identified a leveling-off of the rate of bone demineralization previously experienced by cosmonauts and astronauts alike in conditions of near-zero gravity.

Romanenko's residency in orbit exceeded the old 237-day mark by three full months, and Oberg says that even beforehand Soviet sources had revealed plans for the much longer stay. It represents a significantly larger increase than previous visits, possibly a sign that a leveling-off of the bone demineralization had already been observed after previous flights, giving the Soviets "uncharacteristic confidence" to take a longer step. Furthermore, Oberg adds, Soviet sources indicate that one of three cosmonauts who boarded the station on Dec. 23 may be aloft for a year. □