

## The ups and downs of multiple sclerosis

Contrary to the longstanding notion that patients diagnosed with chronic, progressive multiple sclerosis (MS) face a relentless downhill course, new research shows that 30 percent of such cases stabilize after a two-year period.

For patients diagnosed with progressive MS, the news is a relief from the grim prognosis of the past. "It gives them something to hope for," says lead researcher Donald E. Goodkin, now at the Cleveland Clinic Foundation. Many MS patients experience day-to-day waxing and waning of symptoms, but those who show steady decline during a six-month period are classified as chronic, progressive patients and until now were not expected to stabilize. Goodkin and Richard A. Rudick, also at the Cleveland Clinic, presented their work in Chicago this week at the annual meeting of the American Academy of Neurology.

For MS researchers, the report raises questions about the way some clinical trials are conducted and their results interpreted. Many researchers assume that patients with progressive MS will continue their steady decline, getting weaker and losing vision as time goes on. They often conduct uncontrolled trials in which all patients are given experimental therapy, attributing any improvement in the progressive MS patients to the new treatment. That assumption is false, according to the new study, which shows some progressive MS patients stabilize spontaneously. "We have to be more careful to perform studies that are properly blinded and controlled before drawing any conclusions," Goodkin says.

Multiple sclerosis is a neurological disorder of unknown origin caused when immune system cells destroy the myelin sheath that normally protects nerve fibers in the brain and spinal cord. The resulting scar-like areas can disrupt nerve transmission, causing a wide variety of symptoms including weakness, tremors and loss of vision.

Goodkin conducted the study while at the Fargo (N.D.) Clinic. He and his co-workers categorized 254 MS patients as progressive or stable based on medical history and their scores on a neurological test measuring vision, coordination and other MS markers. Two years after the initial assessment, the researchers found that 30 percent of the chronic, progressive patients showed no decline in test results. Moreover, 32 percent of the patients initially classified as stable had shifted to the chronic, progressive category.

"The results indicate that patients change categories of disease frequently," Rudick says. "These categories are artificial and not terribly meaningful." The new study shows that a bad year doesn't necessarily signal the beginning of a

steady decline, he says. Longer follow-up studies must be done to find out what happens to such patients over a lifetime, he adds.

Many doctors give chronic, progressive patients experimental treatments in a last-ditch attempt to stave off disease progression. Patients with the worst prognosis often receive methotrexate or cyclophosphamide, which suppress the immune system and cause severe side effects such as vomiting. But Rudick's report suggests MS patients may want to wait and see if their symptoms subside

### Mir's pause in permanence

The Soviet announcement last week that the three cosmonauts on the Mir space station will return to Earth April 27 represents not just a planned homecoming but a major change in plans.

When Mir entered Earth orbit in 1986, Soviet officials said it would serve as the basis for assembling a "permanently operating complex" in orbit (SN: 3/1/86, p.136). Two cosmonauts spent several months on board checking out the craft. The following February, another crew occupied Mir. Western observers interpreted their arrival (in part from conversations with other cosmonauts) as a sign that permanent occupancy had indeed begun (SN: 2/14/87, p.103). The station has since been inhabited for more than two years.

Now, however, the Soviet news agency Tass has announced the present crew's imminent return to Earth. Reuters news agency quotes Tass as adding that Mir will remain unoccupied "for several months." Tass made no mention of another crew, which had been expected to go aboard on April 19.

Soviet officials blame the pause on electrical problems aboard Mir and delays in getting two additional modules ready to send up to the station — a workshop for low-gravity materials research and an expanded life-support section including exercise equipment.

Announcement of the Mir hiatus comes less than a month after another major Soviet space difficulty — the loss of radio contact with the unmanned Phobos 2 spacecraft only days before it was to send a pair of landing craft to the surface of the tiny Martian moon Phobos. The Phobos 2 mishap, which occurred shortly after the craft had provided some photos and other Mars data, followed the loss of Phobos 1 last September due to an incorrect computer command from a ground controller. Together, the Phobos failures represent a premature end to the first Soviet Mars mission since 1973. □

before jumping into such therapy, comments Robert P. Lisak at Wayne State University School of Medicine in Detroit. In the meantime, physical therapy can help reduce disability, he says.

Scientists must find better ways of identifying MS patients who will go on to suffer severe and progressive disability, adds George W. Ellison of the University of California, Los Angeles. At this week's meeting, Ellison presented a study showing that individual MS cases can follow a highly variable course ranging from marked improvement to considerable deterioration. But as a group, he found, MS patients show an average course of gradual decline. — K.A. Fackelmann

### Linear collider makes a Z

The Stanford Linear Collider, a unique high-energy accelerator for probing the structure of matter, last week finally produced its first Z<sup>0</sup> particle. An electron moving at nearly the speed of light collided head-on with an equally fast positron, an electron's antimatter counterpart, to produce a Z<sup>0</sup> particle, which decayed almost immediately into a quark-antiquark pair. The Z<sup>0</sup> particle is one of three carriers of the weak nuclear force, which governs certain kinds of radioactive decay.

The feat marks the first time researchers have detected the decay of a Z<sup>0</sup> particle into quarks, which are thought to be the fundamental building blocks of nuclear matter. "This is the most clear evidence that the Z decays into two quarks," says Jonathan M. Dorfan of the Stanford Linear Accelerator Center at Stanford University. "This is what we'd expect to see first."

Delayed more than a year by a variety of technical problems, the collider required close to \$1 million in repairs and improvements to get the necessary stability and reliability for particle creation (SN: 9/10/88, p.167). Collider personnel also had to find a way of getting rid of muons, particles similar to electrons but with a mass 200 times as large, created when stray electrons and positrons strike the collider's walls. The muons accompanied the electrons and positrons down the accelerator, obscuring anything that happened when the electron and positron beams collided. The solution was to install special magnets to spread out any muons present, keeping them out of the collision zone.

The modifications considerably enhanced the collider's efficiency, and within a week of the first sighting, researchers detected at least two more Z<sup>0</sup> particles. "In order to start the physics program, we need to accumulate many more of these events," Dorfan says. "The significance of the first few is that the machine is now working and holding together." □