TREATING SPINA BIFIDA WITH FETAL SURGERY

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The Department of Neurology at University of Utah Hospital became the latest University of Utah recipient of a grant from the National Institute for Neurological Diseases and Stroke (NINDS). Effective September 30, 2013, the department will receive $250,000 every year for five years to become one of 25 Regional Stroke Coordinating Centers nationwide—and the only one in the Intermountain West.

“Stroke is the number one cause of disability in the United States,” says Jennifer Majersik, MD, Assistant Professor of Neurology and Director of the Stroke Center at University of Utah Hospital. “We desperately need to reduce the incidence of stroke and to improve therapy. By participating in these trials, the community will be able to find ways to prevent, treat, and recover from stroke.”

Prior to the initiation of the NINDS Regional Stroke Trials Network, every clinical trial for stroke research required an extensive start-up effort, including hiring new research coordinators, arranging legal contracts, and obtaining ethical review boards. Now, Regional Stroke Coordinating Centers will be able to retain their top-quality staff members from trial to trial, utilize centralized ethics review boards, and work under one legal agreement—all of which will increase trial efficiency, stretching limited funding further.

“University of Utah Hospital has long been a leader in stroke care,” Dr. Majersik says. “To now be a part of a national network dedicated to improving care across the country helps solidify our commitment to improving care in this region.”

Visit the Clinical Neurosciences Center’s stroke website at healthcare.utah.edu/neurosciences/neurology/neurology_stroke/.

Cervical spondylotic myelopathy (CSM) is the most common cause of spinal cord problems in people older than age 60, leading to significant disability. It is caused by degenerative changes in the neck, causing compression of the spinal cord. Symptoms include loss of balance, neck pain and stiffness, numbness in the arms, and weakness in the hands and legs.

Surgery for CSM can result in long hospital stays and high medical costs. In fact, in 2011, research published in the journal *Neurosurgery* found no clear consensus on which surgical approach provides the best medical outcomes and best value for patients with CSM.

To better understand the nature of this condition, University of Utah Hospital’s Clinical Neurosciences Center (CNC) is proud to be a part of a nationally recognized multicenter initiative sponsored by the Patient Centered Outcomes Research Institute (PCORI) to research and compare surgical approaches in patients with CSM. The Neurosciences Center will receive up to $150,000 in funding and will be one of 10 sites in this randomized controlled trial.

“We have yet to define the best strategies for treating patients with this costly and significantly disabling disease,” says Erica Bisson, MD, FAANS, Neurosurgeon, Assistant Professor of Neurosurgery, Medical Director at the CNC, and the site Principal Investigator. “This study is specifically designed to determine the gold standard surgical approach for treating CSM.”
Each year, an estimated 1,500 children in the United States are born with myelomeningocele, the most common form of spina bifida—a spinal cord defect where the fetal spinal cord is improperly formed, fused to the skin and open to the amniotic environment. The condition is usually associated with permanent neurologic dysfunction for which there is currently no cure.

“Infants with myelomeningocele are at an increased risk for developing a host of neurologic disabilities, including hydrocephalus and Chiari malformations,” says Robert J. Bollo, MD, MS, Neurosurgeon at University of Utah Hospital’s Clinical Neurosciences Center and Assistant Professor of Neurosurgery at the University of Utah. “Fetal intervention early in pregnancy can often reverse the Chiari malformation, reduce the risk of hydrocephalus, and improve motor function in select patients.”

ADVANCING THE CAUSE

This congenital anomaly can occur at any level of the spine, but infants characteristically have better outcomes with lower spine defects than those located along the upper spine.

“The traditional standard of care for an infant with spina bifida has been neurosurgical closure for the defect within days of delivery,” Dr. Bollo says. “Neurologic dysfunction due to abnormal formation of the spinal cord cannot be reversed, but surgical correction between 19 and 25 to 27 weeks gestation may prevent ongoing injury to the exposed spinal cord by mechanical and chemical trauma throughout the pregnancy.”

Open fetal surgery requires a dedicated multidisciplinary team including experts in maternal-fetal medicine, pediatric neurosurgery, fetal cardiology, neonatology, and both pediatric and obstetrical anesthesia. Through an incision in the uterus, the spinal defect is exposed and repaired.

“Ensuring the health and well-being of the mother, as well as the developing fetus after surgery, is just as important as the procedure itself,” says Dr. Bollo.

EVALUATION AND REFERRALS

Dr. Bollo works in conjunction with obstetricians and primary care physicians across Utah and recommends that mothers be immediately referred to the program for further evaluation and counseling after a prenatal diagnosis of spina bifida.

“Because only a select group of women will be eligible for fetal surgery, we encourage referring physicians to send women carrying a fetus diagnosed with a neural tube defect for a comprehensive visit to evaluate prenatal tests and discuss neonatal care and long-term outcomes,” he says.

For more information about this procedure or referring a patient to Dr. Bollo, call (801) 662-5340.
Fetal intervention has fast become an important tool in select cases to limit the lifelong morbidity associated with spina bifida. We are working hard to launch this program and are excited to offer patients from our Community and across the region the opportunity for fetal intervention in the near future.

—Robert J. Bollo, MD, MS, Assistant Professor of Neurosurgery at The University of Utah

MOMS Knows Best

In 2011, The New England Journal of Medicine published the results of a landmark clinical study that examined the outcome of patients who underwent open fetal closure of myelomeningocele compared to patients who underwent standard post-natal closure. Half of the participants were randomized to fetal surgery, the other half to have post-natal surgery. Based on the study findings, prenatal repair surgery is now considered a viable treatment option for spina bifida.

Funded by the National Institutes of Health, the Management of Myelomeningocele Study (MOMS) trial was conducted at Vanderbilt University Medical Center in Nashville, the Children's Hospital of Philadelphia, and the University of California, San Francisco.

The study determined that fetal closure of myelomeningocele reduced the incidence of death or hydrocephalus at 12 months and doubled the number of patients walking independently at 30 months.

For more information about the MOMS study, visit spinabifidamoms.com.
New Funding for PEDIATRIC MS RESEARCH

The National Multiple Sclerosis Society will provide $2.5 million in funding to the Network of Pediatric Multiple Sclerosis Centers during the next three years.

With the additional funding, the nine facilities comprising the Network of Pediatric Multiple Sclerosis Centers, as well as The University of Utah Data Coordinating and Analysis Center, will conduct further research into pediatric multiple sclerosis in an effort to identify disease causes and interventions.

Hemisphere Dominance: Fact or Fiction?

When split brain experiments conducted in the 1960s revealed that brain function is lateralized, many people began classifying themselves as right-brain or left-brain dominant depending on their personality traits.

To determine if brain dominance truly exists, researchers at the Clinical Neurosciences Center at The University of Utah performed functional connectivity magnetic resonance imaging on 1,011 participants between ages 7 and 29 during a two-year period. During the imaging analysis, researchers observed resting brain activity, which offered a clearer picture of brain lateralization. While the different brain hemispheres specialize in certain functions, researchers determined that people do not use the neural network on one side of the brain more often than the other, negating the theory of brain dominance.

Watch a video of Jeff Anderson, MD, PhD, lead author, describing this recent study at http://www.youtube.com/watch?v=m7VwcfkwDQw.

As soon as the first snow falls, many hit the slopes. Skiing and snowboarding aren’t without risks, though. The American Association of Neurological Surgeons estimates that severe head injuries account for 15 percent of skiing and snowboarding injuries. In many cases, simple safety precautions could have prevented or lessened the severity of traumatic brain injuries. Encourage patients to:

Wear a helmet. Skiers and snowboarders of all ages should wear a sports-specific ski helmet whenever they are on the slopes to prevent head injury.

Listen to your body. According to the STOP Sports Injuries Campaign, skiing and snowboarding injuries most commonly occur when athletes are tired. To prevent fatigue, take a short break every few hours and stay hydrated.

Choose the right gear. Those who only ski once or twice a season may be tempted to borrow gear from a friend, but ill-fitting skis and snowboards that are too long contribute to falls.
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