The Sibley Report
Educational information to help you at work.

With Acquired Brain Injury, a picture says a lot more than just a thousand words

May/June 2010

Due to the complex nature of the brain, detecting and diagnosing acquired brain injury, as well as determining severity and monitoring treatment, often benefits from diagnostic testing—taking images of the brain. **Magnetic Resonance Imaging (MRI)** shows soft tissue and blood vessels, but not details of bony structures such as the skul**l.** By contrast, a **Computed Tomography Scan (CT Scan)** reveals all of the soft tissue, bone and blood vessels as needed. Both MRI and CT Scans are performed by a Radiologist (physician specialized in radiology) and Radiographic Technologist/Assistant. If your client requires an MRI, you can help decrease stress by providing insight regarding what to expect:

- Client lies down on a special table that moves into the MRI machine, which is essentially a large magnet that is big enough for the client to lie inside.
- As the client lies on the table, the magnet in the MRI machine directs harmless radio signals around the client's head.
- As the signals pass through the client's body, the body's response is picked up by a receiver and sent to a computer.
- The computer analyses the signals, converting them into a visual image. This image is displayed on a video screen and printed on special film.
- Typically takes about 45 minutes to an hour.

Here's what to expect with a CT Scan:

- Similar to an MRI, the client lies down on a special table that moves into the CT machine, however, instead of magnetic fields like the MRI machine, the CT scanner releases very small, controlled amounts of x-ray radiation.
- The client's various tissues absorb the radiation at different rates while a range of detectors measures the x-ray profiles.
- Typically takes about 5 minutes to half an hour.

During both types of tests, it is normal to hear hammering or clicking sounds, which just mean that the machines are working. In addition, based on the specific medical questions, to determine whether the images are normal or whether an abnormality exists, the Radiologist may adjust the test parameters. For instance, in some cases a dye referred to as a contrast agent may be injected into the client to enable the Radiologist to see the image more clearly.

With today's rapid pace of technological advancements, it is encouraging to look ahead and anticipate exciting, new innovations in ABI management. New discoveries in terms of both brain physiology and technology are paving the way for enhanced ABI diagnosis, monitoring, and treatment. Keeping up with ABI research is not only fascinating but provides your clients with hope. Please see the attachment for a sample of brain research recently in the news.

1122 International Blvd., Suite 104
Burlington, Ontario, L7L 6Z8
1.800.363.8900
F. 905.633.7900

News you can use
Recent brain injury research provides new insight…

April 28, 2010: Blood Protein Triggers Scars in the Brain After Injury; New Target Might Help Aid Recovery for Patients With Traumatic Injuries

- "A protein called fibrinogen that is known to help form blood clots also triggers scar formation in the brain and spinal cord, according to new research in the April 28 issue of the *Journal of Neuroscience*. "
- "Researchers found that fibrinogen carries a dormant factor that activates when it enters the brain after an injury, prompting brain cells to form a scar. Scars in the brain or spinal cord can block connections between nerve cells and often keep injury patients from reaching full recovery."
- *Read more:* http://www.sciencedaily.com/releases/2010/04/100427171804.htm

April 28, 2010: Vitamin D Deficiency Associated With Chronic Fatigue in Brain Injured Patients

- "Looked at vitamin D and hormone levels in 90 fatigued and non-fatigued subjects. They also systematically evaluated pituitary hormones and factors such as sleep, attention, emotional well-being, quality of life, coping style, and daily activity. They found that 51% of TBI patients were severely fatigued 10 years after the trauma. Vitamin D deficiency was present in 65% of post TBI patients and significantly related with fatigue ($P<0.05$), with patients who suffered from fatigue more likely to be vitamin D deficient."
- Read more: http://www.sciencedaily.com/releases/2010/04/100427182609.htm

April 11, 2010: Empathy and Violence Have Similar Circuits in the Brain, Research Suggests

- "Researchers from the University of Valencia (UV) have investigated the brain structures involved with empathy -- in other words, the ability to put oneself in another person's position -- and carried out a scientific review of them. They conclude that the brain circuits responsible for empathy are in part the same as those involved with violence."
- *Read more:* http://www.sciencedaily.com/releases/2010/04/100409093405.htm

April 8, 2010: Scans of the Brain Networks May Help Predict Injury Effects

- "Clinicians may be able to better predict the effects of strokes and other brain injuries by adapting a scanning approach originally developed for study of brain organization, neurologists at Washington University School of Medicine in St. Louis have found."
- "The technique, known as resting-state functional connectivity (FC), reveals the health of brain networks that let multiple parts of the brain collaborate. Previous studies have shown that damage to these networks helps explain why damage to one brain region can cause problems in abilities controlled by another brain region."
- *Read more:* http://www.sciencedaily.com/releases/2010/03/100323110103.htm

March 24, 2010: Traumatic Brain Injury Causes Loss of Smell and Taste

- "The ability to taste and smell can be lost or impaired after a head injury, according to a new study…"
- "Published in the journal *Brain Injury*, the investigation established that mild to severe traumatic brain injury could cause olfactory loss."
- *Read more:* http://www.sciencedaily.com/releases/2010/03/100324113418.htm

March 2, 2010: Study Supports Alternative Anti-Seizure Medication Following Acute Brain Injury

- "A study by researchers at the University of Cincinnati Neuroscience Institute (UCNI) at University Hospital supports the use of an alternative medication to prevent seizures in patients who have suffered a life-threatening traumatic brain injury or bleeding stroke".
- "This randomized study supports earlier indications that the anti-seizure medication levetiracetam, marketed as Keppra, was as effective at preventing seizures as the traditional medication, phenytoin, marketed as Dilantin, while producing fewer negative side effects. Patients treated with Keppra also had improved long-term outcomes, the researchers found."
- "The results showed that while patients experienced the same outcomes relating to seizure activity and survival, those treated with Keppra suffered fewer side effects and had better long-term outcomes when examined at three- and six-month intervals following their hospital discharge."
- *Read more:* http://www.sciencedaily.com/releases/2010/02/100217131136.htm

February 22, 2010: Mild Traumatic Brain Injury, Not So Mild After All

- "Although mTBI affects over 1 million people each year in the United States, it is generally ignored as a major health issue. However, this "mild" form of injury induces persisting neurological and cognitive problems in many of these patients, exacting an enormous emotional and financial toll on society."
- "Despite the prevalence and impact of mTBI, little is known about how mTBI affects nerve cells and connections in the brain, and therefore clinical outcomes after injury. Smith and colleagues have begun to amass data from human and animal studies on mTBI at 2-4 days after injury using advanced neuroimaging techniques. They have found distinct changes throughout the white matter in the brain. Also, protein markers of brain pathology were identified after mTBI in the blood of mTBI patients."
- *Read more:* http://www.sciencedaily.com/releases/2010/02/100219204409.htm

February 22, 2010: Progesterone for Traumatic Brain Injury Tested in Phase III Clinical Trial

- "Researchers at 17 medical centers across the country soon will begin using the hormone progesterone to treat patients who experience traumatic brain injury (TBI). The treatment is part of a randomized, double-blind Phase III clinical trial that will enroll approximately 1,140 people over a three- to six-year period beginning in March, 2010. The trial is funded by a grant to Emory University from the National Institutes of Health."
- *Read more:* http://www.sciencedaily.com/releases/2010/02/100219204407.htm