The RECOVERY *from*

CHEMO-BRAIN

USING NEUROFEEDBACK

at Rosewood

Many People Ask "Is Chemo Brain Reversible?"

Chemo brain, sometimes called chemo fog, is a common term used by cancer survivors to describe thinking and memory problems that can occur after cancer treatment. It is a mental cloudiness reported by about 30 percent of cancer patients who receive chemotherapy.

Though chemo brain is a widely used term, it is a bit misleading, but the experience is a very real thing. Even though the term chemo brain is not commonly accurate, it is still what most people refer to in regards to addressing memory issues from cancer treatment.

Chemo brain is not just the result of chemotherapy and the exact cause of chemo brain is not known but the changes in mental function are real and not imagined; they can be extremely frustrating to those of who have it. One way to describe it is a chronically wandering brain, where the cancer survivor is essentially stuck in a shut out mode. It is characterized by forgetting things, trouble concentrating, short attention span, and taking longer to finish things. Living with chemo brain can be stressful for both cancer survivors and the people who love them.

Even though chemo brain is a very real experience for many people undergoing chemotherapy, very little research has been done on it. Some postulate that chemo brain is the result of brain damage, much of which heals over time and some of which appears to persist for decades. However, initially researchers assumed that chemo brain did not involve actual physiological brain damage, in part because it was thought that chemotherapy did not cross the blood-brain barrier. Nevertheless, neuropsychological evaluations of adults complaining of chemo brain has confirmed a number of common cognitive deficits affecting memory, attention etc., varying in severity.

The quality of life after chemotherapy is critically important, and chemo brain is significant among these survivors. One of the unknown things about chemo brain is just how many cancer survivors have it. Even though the exact cause of chemo brain is not known, the changes in mental function are real and not imagined. Having chemo brain can feel like moving through a fog, where the outlines of thoughts are indistinct and it's difficult for ideas to fully form. It can make it hard for someone to think, concentrate, and do tasks.

And even though the exact cause isn't known, this mental fog can happen at any time when you have cancer. One thing that has been successful, with patients affected by chemo brain, and has improved their mental focus and reduced their symptoms is a type of neurofeedback known as NeurOptimal®. Interestingly enough, many people affected with chemo brain still score normally on cognitive tests. While the researchers only studied breast cancer patients, chemo brain has been reported in patients undergoing chemotherapy for other cancers as well.

The cause of chemo brain has been hard to zero in on and this has caused some health care professionals to doubt its existence. Some scientists believe chemo brain has more than one cause. One thing which has hindered research is, because of the lack of understanding about chemo brain, doctors are using different tests to measure brain activity making it impossible to compare results.

Neurofeedback helps relieve chemo brain symptoms, Cleveland researcher finds.

Social psychologist Jean Alvarez, a breast cancer survivor, struggled with the condition for years. In 2007, the Lakewood resident turned to neurofeedback when nothing else seemed to help her get rid of the two symptoms she said were "left over" from chemotherapy treatment that ended years earlier.

Alvarez wanted to regain her ability to multitask cognitively, instead of being able to focus only on one thing at a time. She also wanted to stop getting stuck trying to find words midsentence. The ability to have a fluid conversation had escaped her.

Electroencephalogram, or EEG, biofeedback, otherwise known as neurofeedback, is a non-invasive treatment that provides information on and measures changes in a person's brain-wave activity. The brain "self-corrects" by using the feedback to reorganize.

Traditional neurofeedback pinpoints a specific area of the brain in need of correction. But no one knows what the electrical "signature" of chemo brain is, so Alvarez used another type of neurofeedback equipment that addresses the brain as an integrated system, making the specific location of the problem less important.

Resistant to the suggestion of her physician at the time to undergo neuropsychological testing, Alvarez instead decided to pursue neurofeedback after revisiting something she had previously read about the technique.

Not only did Alvarez find relief, but after 10 treatments, she felt as good as she had before she began chemotherapy. That led her to design a research study to see if her success could be replicated. She hoped to provide relief to others more quickly than if they waited for symptoms to dissipate on their own, months or years later.

The small study looked at the impact of neurofeedback on lessening post-cancer cognitive impairment, or PCCI. Her study was published online April 12th, 2013 in the journal Integrative Cancer Therapies.

The type of neurofeedback employed in the study was a brief interruption in music that the study subject was listening to. This newer approach to neurofeedback, Alvarez wrote, trains the whole brain by having participants "let go" instead of engaging actively or consciously with the instrument providing that feedback.

Alvarez, director of research at the newly incorporated Cleveland-based Applied Brain Research Foundation of Ohio, began enrolling breast cancer patients for the study in early 2010.

Twenty-three women, who ranged in age from 43 to 70 and who had completed treatment for breast cancer, received biofeedback in 45-minute sessions, twice a week for 10 weeks. The time from the last chemotherapy treatment to the start of the biofeedback ranged from six months to five years.

The study participants were given four different self-reporting tests for 10 weeks that measured cognitive function; fatigue, energy level and quality of life; sleep quality and disturbances; and somatization (when mental factors such as stress cause physical symptoms), depression and anxiety.

Over a second 10-week period, the participants received neurofeedback twice a week, for 33 minutes a session, and continued the self-reporting tests. Four weeks after the last neurofeedback session, the women completed one final self-reporting test.

What Alvarez found was that the treatment did help relieve symptoms of PCCI, or chemo brain, and it did help other patients return to the level of function they had prior to starting chemotherapy.

Chemo brain symptoms were reversed in 21 of the 23 women. "I was hoping to see all of those good results, but I'm not sure I was expecting to see them," Alvarez said. "Almost everyone improved and returned to normal levels. That was surprising and gratifying."

Not all of the study participants showed benefits right away, or at the same rate, she said. Some started noticing a change after a half-dozen sessions, while a few didn't begin seeing improvement until toward the end of their participation, Alvarez said.

For some women, sleep quality improved first; in others, symptoms of depression lessened, she said, adding, "It's a pretty individual process."

A real difference for one patient diagnosed with breast cancer in late 2008, Dianne Borowski of Bay Village completed chemotherapy in July 2009. In February 2010 she contacted Alvarez and enrolled in the study soon afterward.

"I was having quite a bit of it [chemo brain]," said Borowski, 71, who was plagued by memory and sleep troubles. When she heard about the trial and that it was looking for volunteers, "I thought, 'My goodness. This is wonderful.' ". Relief from the sessions was not instantaneous, she said. But as time went by, she started to notice a real difference. She started misplacing things less frequently.

Her sleep improved. She no longer had to search for words to express herself. "I was amazed at the process and how it started to work," she said.

Borowski says her chemo brain flares up occasionally if she's under a lot of stress, but so far it hasn't returned to her pre-chemotherapy levels.

Researchers continue to shed light on the effect that chemo brain -- given that name only in the past dozen years or so -- has on cancer survivors.

Last week, the Journal of the National Cancer Institute published online a study from the University of California, Los Angeles. Researchers who evaluated 189 early-stage breast cancer patients post-treatment (radiation and/or chemotherapy) found a strong link between patients' self reported complaints of changes in memory and thinking and data from neuropsychological testing that showed those changes.

A study that appeared in the Journal of Clinical Oncology in early 2012 found lingering cognitive effects of chemotherapy in some breast cancer patients as long as 20 years after treatment.

Over the summer at the annual American Society of Clinical Oncology meeting, Cleveland Clinic's Taussig Cancer Institute oncologist Dr. Halle Moore presented the results of a small pilot study that showed the EEG to be a good measuring tool in documenting the impact of chemo brain on changes in brain function. "Chemo brain is real," said Dr. Fremonta Meyer, a psychiatrist at the Dana Farber Cancer Institute in Boston and co-author of Alvarez's study who helped interpret the data.

Among the patients she sees are those with post-cancer cognitive problems that may sound like the effects of normal aging or menopause. But difficulty finding words, short-term memory loss, problems sleeping and the inability to multitask effectively are all things that can be the result of chemo brain, she said.

One of the big shortcomings in the literature dealing with chemo brain has been the lack of solutions to the defined problem, Meyer said. "We now have another intervention that we can [potentially] offer to patients, which I think is huge," she said.

It wasn't just a placebo effect. While questions can be raised about whether the soothing qualities of the neurofeedback worked as a placebo and served to calm the participants or whether it was the neurofeedback that led to cognitive improvements, the researchers maintain that the results are hard to attribute to a placebo effect alone.

They point to several factors that underscore the validity and reliability of neurofeedback, among them:

• Analysis that focused on improvement following the self-reporting tests, after a placebo effect would have been present.

• Measuring the neurofeedback impact took place before the start of each session, typically three to four days after the previous session, so that responses didn't just reflect short-term effects.
• Improvement was measured in four distinct clusters of symptoms -- cognitive function, fatigue, sleep and emotional well-being -- which were not highly connected at the start of the testing.

"A follow-up study with a control group will provide a definitive answer", said Alvarez; who added that she hoped any future studies would involve a larger, more diverse population of cancer survivors, and incorporate pre- and post-functional MRI and neuropsychological tests that would confirm the study's findings.

She also hopes future studies will answer whether or not genetic markers exist that can help identify which people would benefit the most from neurofeedback and if neurofeedback would be able to keep chemo brain from emerging in the first place, if given in conjunction with standard cancer treatment.

The same equipment which was successfully used in Alvarez's research study is now readily assessable in rural Ireland, local clinician reports.

Janet P. Corrington, a therapist at Rosewood Psychological Services located in Ballinasloe, Co Galway, has herself experienced symptoms often associated with chemo brain.

She was the victim of an automobile accident which resulted in an acute neurological injury requiring an intensive regime of rehabilitation treatments. She states; "I had to re-learn how to walk, and how to speak. At times, I found it difficult to maintain cohesive thoughts in everyday conversations, and anytime I attempted to discuss the accident my brain would just become mush."

She continued, "Some of these cognitive problematic manifestations continued for years. At times it could be quite embarrassing."

She related that she had heard of neurofeedback years ago while she and her husband operated a therapeutic home for severely abused children in the US.

These were sometimes called "throw-away" children as their emotional injuries were so pronounced, their behaviours so violent and their ability to attach was so deficit that they were unable to have significant interaction with others.

There were some reports that neurofeedback had been successful is helping some children who suffered from this condition; which was called Reactive Attachment Disorder (RAD). It was suggested that neurofeedback could help reorganize their pattern of thinking in such a manner that would allow them to function differently and have a chance to live productive lives in society and create the ability to establish meaningful relationships in adulthood.

The downside was it was expensive, very expensive and the effectiveness seemed to be related to the skills of the person administrating the process.

Not only was the equipment expensive to purchase, the person conducting the neurofeedback sessions had to be qualified. As well, an additional expert was needed to interpret the results of the neurofeedback session and establish a training program.

Needless to say, the population of kids with Janet and Don did not have access to the financial recourses needed to test neurofeedback out. Also, sometimes there could be unwanted side effects.

So fast forward some 20 years, through a series of events Janet and her husband, Don, now live in Ireland, and operate Rosewood Psychological where they provide counselling, psychotherapy and trauma related therapy.

Once again, accounts of neurofeedback brain training pop up every now and then, but this time there is an extra element. There is now a

neurofeedback designed by a duo of Clinical Psychologists to work with the brain as a non-linear dynamical system. This is the cutting-edge of Neuro-Technology.

With the required expertise built into the system and its unsurpassed ease of use, it does not depend on the skill level of the individual administering the neurofeedback to be effective. There are over three million hours of this type of neurofeedback documenting it to be effective and safe.

After much consideration Janet and Don decided to purchase the NeurOptimal® neurofeedback system. The equipment remained expensive, but the cost of providing clients neurofeedback sessions would become affordable.

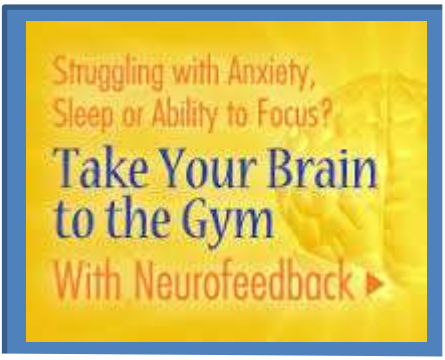
But that is not the end of this story. Janet and Don decided that they each should test this out before they offered to any clients, and they did.

Janet was still subject to instances of cognitive and physical manifestations related to the earlier vehicle accident. She had accepted that this is just how her life would be.

After having NeurOptimal® neurofeedback for a while she noticed that these were absent from her life. She said "It wasn't an epiphany, one day I just realised that I did not lose my words when I became a little stressed. I could actually discuss the accident and articulate my feelings about it. This became my *new normal*."

Janet is looking forward to the time that NeurOptimal® will be a recognized standard for recovery from chemo brain and neurological injuries.

I Want A Complimentary Demonstration .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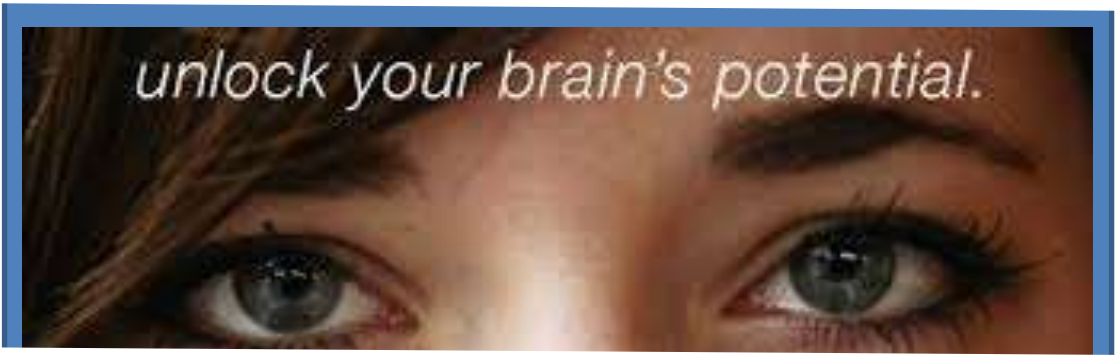
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