A New Approach to the Treatment of Neurological Pathologies

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September 30, 2015
Montreal, Canada
The Brain

“The Mirror of the Soul”
The Brain
Mechanism of Injury

http://www.braininjury.com/injured.shtml
Symptoms

**Concussion**

- Headache
- Confusion
- Nausea
- Fatigue
- Vomiting
- Confusion
- Amnesia
- Mood changes
- Blindness vision
- Decreased reaction time
- Difficulty sleeping
- Sensitivity to light
- Lack of concentration
- Loss of energy
- Inappropriate emotions
- Feeling of sadness
- Dizziness
- Irritability
- Reduced coordination
- Getting your “bell rung”
- Easily distracted
Dr. Norman Doidge

Psychiatrist, psychoanalyst, researcher, and author. He is on faculty at the University of Toronto’s Department of Psychiatry, and Research Faculty at Columbia University’s Center for Psychoanalytic Training and Research, in New York.
The Center for Disease Control and Prevention defines Concussion as:

A concussion is a type of traumatic brain injury—or TBI—caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth. This sudden movement can cause the brain to bounce around or twist in the skull, stretching and damaging the brain cells and creating chemical changes in the brain.

[http://www.cdc.gov/traumaticbraininjury/get_the_facts.html](http://www.cdc.gov/traumaticbraininjury/get_the_facts.html)
Pathophysiology of Concussion

Figure 1. Schematic drawing of a synapse with glutamate is being converted to glutamine in the astrocyte and transported back to the presynaptic terminal where glutamine is converted back to glutamate. During this process, and with decreasing ATP levels as the signal, glucose is taken up from the blood to supply neurons and astrocytes with energy.

Figure 2. Following TBI there is a neuroinflammation with down-regulation of astroglial glutamate transport systems. If this state is not restored completely, there will be an impaired extracellular glutamate clearing with slightly increased extracellular glutamate levels, slight astrocyte swelling and impaired glucose uptake. Neuronal activity, if long-lasting, may result in energy crisis.

Incidence

- TBI is a contributing factor to a third (30%) of all injury-related deaths in the United States.

- Approximately 25% of soldiers returning from war-zones in Iraq, Afghanistan, etc. are affected by variations of this type of trauma.

- Within the past 10 years, the diagnosis for concussion in high school sports participants has increased annually by 16.5%.

- In 2009-2010, over 14,000 concussion related injuries were reported to the National Ambulatory Care Reporting System reflecting visits to an Ontario Hospital ER.

- Direct medical costs and indirect costs such as lost productivity totalled $60 billion in the US in the year 2000.
Possible Therapies

- Reassurance, Discussion, Compensatory Strategy
- Neurocognitive Rehabilitation
- Cognitive rest
- Medications
- Chiropractic Therapy
- Craniosacral Therapy
- Vestibular Rehabilitation Therapy
- **Low Levels Laser Therapy (LLLT)**
Ying-Ying Huang, Asheesh Gupta1, Daniela Vecchio1, Vida J. Bil de Arce1, Shih-Fong Huang1, Weijun Xuan1, and Michael R. Hamblin. Transcranial low level laser (light) therapy for traumatic brain injury. J. Biophotonics 5, No. 11–12, 827–837 (2012)
Neuromodulatory Effects of Laser Therapy

3 Phases:

1. **Direct Effect**
   - Photon Particle directly interacting with surrounding neurological, connective and skeletal tissues

2. **Indirect Effect**
   - Circulating photons are absorbed by CSF and scattered to CNS via ventricles

3. **Humoral Effect**
   - Distribution of photon particles to all tissues in the body
Meditech Clinic in Toronto
Case Study 1

- 66 year old man
- Patient visiting Toronto clinic for 1 week from another country

CC: Chronic Depression

HPI:
- Sustained severe concussions at age 18 and 22
- Cognitive impairment

The Diagnosis formulated was:
1. Cerebral Concussion

Tx: Daily Laser Therapy for one week at clinic in Toronto
- Improvement in depressive mood, “Brain Fog”, short term memory
- In order to sustain this patient’s improved status, he was instructed to carry on with periodic therapy utilizing a Home Therapy System.

Patient Goal: Return to work full-time in 6 weeks
Case Study 2

- 15 year old male student
- Sustained concussion in a wrestling competition

CC:
- Severe headaches (24/7), tinnitus, noise and light sensitivity, sleep difficulties, and severe stutter
- High doses of Aspirin and Tylenol with little improvement
- Was unable to attend school
- Severe depression

PE:
- ROM of Cervical Spinal 20% of Normal
- Tenderness on palpation, extending form occiput to T2 level

The Diagnosis formulated was:
- 1. Cerebral Concussion
- 2. Myofascitis – Cervical Spine

Tx:
- Laser Therapy was instituted in late February and extended to March 18, 2015
- First 5 treatments, symptoms had subsided in excess of 60%
- Returned to school full-time 4 weeks post-initiation of Laser Therapy
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Case Study 3

- 10 year old female student
- 1st Concussion - 8 months
- 2nd Concussion - March 2014 while skiing
- 3rd Concussion – January 2015 competing as a gymnast in trampoline competition

CC:
- Cognitive impairment, headaches, blurred vision, hypersensitivity to external stimuli, dizziness, irritability and highly labile mood swings

HPI:
- Sustained extensive laceration over the occiput w/ LOC

PE:
- ROM of the Cervical Spine was 80% of normal
- Edema and tenderness over the occipital area
- Laceration healing satisfactorily

The Diagnosis formulated was:

1. Cerebral Concussion (x3)
2. Myofascitis – Cervical Spine
3. Occipital Soft Tissue Injuries/Laceration

Tx: Total of 15 treatments were applied with overall improvement
Case Study 4

- 40- year- old secretary feel down 13 stairs
- Sustained Basal Skull Fracture
- LOC indeterminate period of time

**CC:**
- Constant headaches most sever in the occipital lobe, dizziness, lack of energy, depression and difficulty sleeping.

**PE:**
- ROM of the Cervical Spine was 70% of normal
- Edema and tenderness over the occipital area to T2, posterior aspect of the cranium external to the cerebellum and the posterior hemispheres

**The Diagnosis formulated was:**
1. Cerebral Concussion (x3)
2. Myofascitis – Cervical Spine
3. Basal Skull Fracture

**Tx:** From a global perspective an 80% improvement level was noted over the course of 10 Laser Therapy sessions.
Conclusion

- Bioflex Laser Technology is presently treating 10-15 cases/wk.

- At Meditech Clinic, we have learned to better understand the mechanisms of action instrumental in the induction of traumatic brain injuries.

- As our experience in treating this growing body of patients increases, we are confident in our ability to offer definitive solutions in the treatment of these conditions.
Thank You!