

Tag: geriatric function

By Carole Lewis, PT, DPT, GCS, GTC, MSG, MPA, PhD, FAPTA, and Keiba Shaw, EdD, MPT, MA

When Using the Fugl, Don't be so Frugal

As therapists sometimes we hold back in providing our patients with the most efficacious care on hand. This is not because we do not want to provide our patients with the best care available, but because we rely on “what we know best and are comfortable with.”

One can liken it to being frugal with the wealth of knowledge we possess or could possess. The amount of evidence that is easily available on valid treatments in many areas of rehabilitation, particularly stroke, is astounding.

Some of the best sources for evidence-based treatments are included in journals such as *Stroke*, *Clinical Rehabilitation*, *Archives of Physical Medicine and Rehabilitation* so it seems odd that we fall back on empirical treatment ideas and do not at times integrate all this wonderful evidence based information into our clinical care.

The Fugl-Meyer test looks at many areas of impairment. Once these areas are identified then evidence based treatment strategies can be implemented. Since there are so many studies addressing evidence-based interventions for impairments as a result of stroke, this article will focus on the areas of spasticity reduction and the technique of constraint-induced movement to alleviate impairments of the upper extremity.

SPASTICITY

Barnes has written several compilations on the management of spasticity. (1) This paragraph lists some of the treatment strategies described and researched by Barnes in his review article. The strategies identified have been shown to be effective in treating spasticity due to post stroke. First Barnes suggests alleviating any exacerbating factors. For example, infection, constipation, skin irritation can increase spastic tone. Sometimes therapists may have seen patients in the hospital with higher tone from skin irritability caused by a change in laundry detergent that was annoying to the skin of the patient. Positioning can change tone. In standing and sitting upper extremity tone tends to be greater than when supine. Splinting and casting can decrease spasticity at least temporarily. Sometimes the use of heat or cold can get a decrease in tone. Many hands on techniques from Bobath to PNF may have an effect on decreasing spasticity according to Barnes. Medications will be explored in greater detail below, but have been suggested by Barnes as a means of treating spasticity.

Botulinum toxin injections have shown promising results in the treatment of spasticity post stroke. Below are some summaries of a sampling of studies that have examined its use within this population. “Botulinum Toxin Injection of Spastic Finger Flexors in Hemiplegic Patients” by Rodriquez; showed significantly reduced tone, reduced clonus, and greater active finger extension 4 months after injection, however subjects decreased to pre injection levels at 6 months and subsequent injections had minimal results.(2) Brashear published several studies which showed reduced spasticity in the wrist and finger and decreased disability but he only followed his subjects for 3 months. (3,4)

Francisco in an article entitled “Improvement in Walking Speed in Post stroke Spastic Hemiplegia After Intrathecal Baclofen” followed patients for 9 months and showed that the use of Intrahtecal Baclofen combined with physical therapy increased walking speed and functional mobility. (5)

A big concern of Botox that was shown to be less of a problem with the Baclofen was the issue of loss of strength with the administration of the treatment. Ivanhoe showed improvements in function that were noted 3 & 12 months after the start of the Baclofen. This study showed no adverse effects on strength and an increase in function, quality of life and decreased spasticity. (6) Bergfeldt's study followed patients on Baclofen for 6 weeks and showed a dramatic 90% improvement in spasticity. (7)

A final interesting study that used rehabilitation after botulinum toxin injection used taping for wrist and finger spasticity after botulinum toxin injection for wrist and finger.

This study done by Carda showed that patients treated with adhesive taping and Botox achieved a significant reduction in spasticity (8). The article shows the taping strategy which is quite complicated.

Constraint Induced Movement Therapy

Constraint Induced movement therapy (CIMT) is not new. Dr. Taub introduced this technique in 1993 in *The Archives of Physical Medicine and Rehabilitation*. (9) Almost a decade later this technique is getting the attention it deserves. Below are a few studies that show its efficacy as well as some of its limitations. Dr. Taub's website is taubtraining@uabmc.edu

Kunkel's study in 1999 really showed the positive aspects of CIMT. (10) In his study he performed restraint of unaffected UE in a sling for 14 days combined with 6 hours of training a day (shaping-part-task practice done 10x with encouragement and concentration and not excessive effort). This part of this study and criteria for eligibility that many are not aware of is that to be included in CIMT one must be able to extend at least 20 degrees at the wrist and 10 degrees at the MP and IP joints. Hence individuals who have flaccid upper extremities would not be considered for this therapy.

Many felt that 6 hours was very long and not very practical so Sterr did a study looking at longer versus shorter daily CIMT. This protocol was a 3 hour CIMT and it significantly improved motor function, but it was less effective than the 6 hour training schedule. (11)

Bonifer in an article entitled: "CIMT After Stroke; Efficacy for Patients With Minimal Upper-Extremity Motor Ability" addressed the question of patients at a lower level of function benefiting from CIMT. (12) This study showed good results. Patients were included if they could grasp & release a washcloth and were excluded if they were at too high a level.

Dr. Steve Wolf published a wonderful article in *JAMA*; Nov. 1, 2006 entitled: "Effect of CIMT on Upper Extremity Function 3-9Mos After Stroke". (13) His study showed a significant improvement in CIMT group in that time period. Finally, Brogradh looked at the possibility of extending the benefits of CIMT by wearing a Mitt and found the motor performance improved significantly after 2 weeks of CIMT treatment but no additional effect was seen from wearing a mitt for another 3 months. (14)

CONCLUSION

We have just reviewed two areas of rehabilitation (spasticity reduction and constraint induced movement therapy) and noted some of the improvements that can be obtained in our patients post stroke using these evidenced based techniques. The treatment ideas based on the Fugl-Meyer are limitless. Stop being frugal! You are encouraged to go to the literature and seek out creative and

new ways to treat your patients post stroke. Our patients deserve it and we will grow from the experience as well.

References

1. Barnes MP. "Management of Spasticity." Eur Med Phys 32:1-7, 1996.
2. Rodriguez AA, McGinn M, Chappell R et al. "Botulinum Toxin Injection of Spastic Finger Flexors in Hemiplegic Patients." Am J Phys Med Rehabil, Jan/Feb 2000; 79(1): 44-47.
3. Brashear A, Gordon M, Elovic E, Kasscieh VD, Marciniak C, et al, "Intramuscular injection of Botulinum toxin for the treatment of wrist and finger spasticity after a stroke." N Engl J Med 2002Aug; 347(6): 395-400
4. Brashear A, McAfee AI, Kuch ER, Ambrosius WT. "Treatment with Botulinum Toxin Type B for Upper-Limb Spasticity." Arch Phys Med Rehabilitation 84; 103-7 January 2003
5. Francisco GE, Boake C. "Improvement in Walking Speed in Poststroke Spastic Hemiplegia After Intrathecal Baclofen Therapy: A Preliminary Study." Arch Phys Med Rehabil 2003; 84: 1194-9.
6. Ivanhoe CB, Francison GE, McGuire JR, Subramnaian T, Grissom SP. "Intrathecal Baclofen Management of Poststroke Spastic Hypertonia: Implications for Function and Quality of Life." Arch Phys Med Rehabil 2006;87:1509-1514
7. Bergfeldt U, Borg K, Kullander K, Julin P. "Focal Spasticity Therapy With Botulinum Toxin: Effects on Function, Activities of Daily Living and Pain in 100 Adult Patients" J Rehabil Med 2006; 38: 166-171.
8. Carda S, Molteni F. "Taping Versus Electrical Stimulation After Botulinum Toxin Type A Injection for Wrist and Finger Spasticity. A Case-Control." Clinical Rehabilitation 2005; 19: 621-626.
9. Taub E, et al. "Technique to Improve Chronic Motor Deficit After Stroke." Arch Phys Med Rehabil, 74:347-354, April 1993.
10. Kunkle A et al. "Constraint-Induced Movement Therapy for Motor Recovery in Chronic Stroke Patients." Arch Phys Med Rehabil, June 1999' 80: 624-628.
11. Sterr A, Elbert A, Berthold I, Kobel S, et al. "Longer Versus Shorter Daily Constraint-Induced Movement Therapy of Chronic Hemiparesis: An Exploratory Study" Arch Phys Med Rehabil 2002; 83:1374-7
12. Bonifer NM, Anderson KM, Arciniegas DB. "Constraint-Induced Movement Therapy After Stroke: Efficacy for Patients with Minimal Upper Extremity Motor Ability." Arch Phys Med Rehabil 2005;86:1867-73.
13. Wolf SL et al. "Effect of Constraint Induced Movement Therapy on Upper Extremity Function 3 to 9 Months After Stroke. The EXCITE Randomized Clinical Trial." JAMA, November 1, 2006; Vol 296, No. 17.
14. Brogardh C. "Constraint Induced Movement Therapy in Patients with Stroke: A Pilot Study on Effects of Small Group Training and of Extended Mitt Use." Clinical Rehabilitation 2006; 20: 216-227.