NEUROLOGY

COMMENTARY

The paper by Pandian et al is a review article related to stroke in developing countries. The literature related to this topic is limited despite a huge burden of stroke in the developing world. Factors responsible for the extremely low use of thrombolytics in these countries are discussed. The article not only provides insight and analysis of the situation but makes recommendations. This article is useful for clinicians and scientists involved in stroke research.

The EXCITE study is the first randomized, multi-center trial evaluating the role of constraint therapy in stroke rehabilitation. Upper extremity functional limitation is present in 50-70% stroke survivors and is frustrating for occupational as well as physical therapists. That constraining the normal hand leading to forced utilization of the hemiparetic or hemiplegic hand results in significant recovery is a promising finding. The article also discusses cortical activation and other mechanisms underlying this recovery.

The study by Kupsch and colleagues is promising. Primary generalized and segmental dystonia is a debilitating condition usually refractory to medical therapy and poorly responsive to botox therapy. This is the first study reporting up to 50% improvement in these patients by deep brain stimulation of the globus pallidus interna (GPi) as compared to sham stimulation. The treatment was associated with adverse events over the 9-month study period. Long-term effects and adverse events are not known. Despite the cost and the side effects, the findings are promising and provide hope for these otherwise incapacitated patients.

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STROKE THROMBOLYSIS IN DEVELOPING COUNTRIES

Background: Over the past few decades, the burden of stroke in developing countries has grown to epidemic proportions. Two-thirds of global stroke occurs in low- and middle-income countries. We have found that little information is obtainable concerning the availability of thrombolysis therapy in developing countries. Summary of review: The epidemiology of stroke is well investigated in the developed world; however, in the developing world stroke is less well documented. Most of the available stroke data from these countries are hospital-based. Stroke thrombolysis is currently used in few developing countries like Brazil, Argentina, Senegal, Iran, Pakistan, China, Thailand, and India. The two main barriers for implementation of thrombolysis therapy in developing countries are the high cost of tissue plasminogen activator and lack of proper infrastructure. Most of the centers with the infrastructure to deliver thrombolysis for stroke are predominantly private sector, and only available in urban areas. Conclusion: Until a more cost-effective thrombolytic agent and the proper infrastructure for widespread use of thrombolysis therapy are available, developing nations should focus on primary and secondary stroke prevention strategies and the establishment of stroke units wherever possible. Such multi-faceted approaches will be more cost-effective for developing countries than the use of thrombolysis.

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Wolf SL et al, for the EXCITE investigators

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EFFECT OF CONSTRAINT-INDUCED MOVEMENT THERAPY ON UPPER EXTREMITY FUNCTION 3 TO 9 MONTHS AFTER STROKE: THE EXCITE RANDOMIZED CLINICAL TRIAL

CONTEXT: Single-site studies suggest that a 2-week program of constraint-induced movement therapy (CIMT) for patients more than 1 year after stroke who maintain some hand and wrist movement can improve upper extremity function that persists for at least 1 year. OBJECTIVE: To compare the effects of a 2-week multisite program of CIMT vs usual and customary care on improvement in upper extremity function among patients who had a first stroke within the previous 3 to 9 months. DESIGN AND SETTING: The Extremity Constraint Induced Therapy Evaluation (EXCITE) trial, a prospective, single-blind, randomized, multisite clinical trial conducted at 7 US academic institutions between January 2001 and January 2003. PARTICIPANTS: Two hundred twenty-two individuals with predominantly ischemic stroke. INTERVENTIONS: Participants were assigned to receive either CIMT (n = 106; wearing a restraining mitt on the less-affected hand while engaging in repetitive task practice and behavioral shaping with the hemiplegic hand) or usual and customary care (n = 116; ranging from no treatment after concluding formal rehabilitation to pharmacologic or physiotherapeutic interventions); patients were stratified by sex, prestroke dominant side, side of stroke, and level of paretic arm function. MAIN OUTCOME MEASURES: The Wolf Motor Function Test (WMFT), a measure of laboratory time and strength-based ability and quality of movement (functional ability), and the Motor Activity Log (MAL), a measure of how well and how often 30 common daily activities are performed. RESULTS: From baseline to 12 months, the CIMT group showed greater improvements than the control group in both the WMFT Performance Time (decrease in mean time from 19.3 seconds to 9.3 seconds [52% reduction] vs from 24.0 seconds to 17.7 seconds [26% reduction]; between-group difference, 34% [95% confidence interval {CI}, 12%-51%]; P<.001) and in the MAL Amount of Use (on a 0-5 scale, increase from 1.21 to 2.13 vs from 1.15 to 1.65; between-group difference, 0.43 [95% CI, 0.05-0.80]; P<.001) and MAL Quality of Movement (on a 0-5 scale, increase from 1.26 to 2.23 vs 1.18 to 1.66; between-group difference, 0.48 [95% CI, 0.13-0.84]; P<.001). The CIMT group achieved a decrease of 19.5 in self-perceived hand function difficulty (Stroke Impact Scale hand domain) vs a decrease of 10.1 for the control group (between-group difference, 9.42 [95% CI, 0.27-18.57]; P=.05). CONCLUSION: Among patients who had a stroke within the previous 3 to 9 months, CIMT produced statistically significant and clinically relevant improvements in arm motor function that persisted for at least 1 year.Trial Registration clinicaltrials.gov Identifier: NCT00057018.

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Kupsch A et al, for the Deep Brain Stimulation for Dystonia Study Group

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PALLIDAL DEEP-BRAIN STIMULATION IN PRIMARY GENERALIZED OR SEGMENTAL DYSTONIA

BACKGROUND: Neurostimulation of the internal globus pallidus has been shown to be effective in reducing symptoms of primary dystonia. We compared this surgical treatment with sham stimulation in a randomized, controlled clinical trial. METHODS: Forty patients with primary segmental or generalized dystonia received an implanted device for deep-brain stimulation and were randomly assigned to receive either neurostimulation or sham stimulation for 3 months. The primary end point was the change from baseline to 3 months in the severity of symptoms, according to the movement subscore on the Burke-Fahn-Marsden Dystonia Rating Scale (range, 0 to 120, with higher scores indicating greater impairment). Two investigators who were unaware of treatment status assessed the severity of dystonia by reviewing videotaped sessions. Subsequently, all patients received open-label neurostimulation; blinded assessment was repeated after 6 months of active treatment. RESULTS: Three months after randomization, the change from baseline in the mean (+/-SD) movement score was significantly greater in the neurostimulation group (-15.8+/-14.1 points) than in the sham-stimulation group (-1.4+/-3.8 points, P<0.001). During the open-label extension period, this improvement was sustained among patients originally assigned to the neurostimulation group, and patients in the sham-stimulation group had a similar benefit when they switched to active treatment. The combined analysis of the entire cohort after 6 months of neurostimulation revealed substantial improvement in all movement symptoms (except speech and swallowing),

the level of disability, and quality of life, as compared with baseline scores. A total of 22 adverse events occurred in 19 patients, including 4 infections at the stimulator site and 1 lead dislodgment. The most frequent adverse event was dysarthria. CONCLUSIONS: Bilateral pallidal neurostimulation for 3 months was more effective than sham stimulation in patients with primary generalized or segmental dystonia. (ClinicalTrials.gov number, NCT00142259 [ClinicalTrials.gov].)