

Cedars-Sinai movement disorders expert on international task force for dystonia treatment

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Neurologist Michele Tagliati, MD, director of the Movement Disorders Program at Cedars-Sinai Medical Center, served on an elite international task force commissioned by the Movement Disorder Society to provide insights and guidance on deep brain stimulation for dystonia, an uncommon condition that causes sustained, sometimes crippling muscle contractions.

The resulting articles, describing the data reviewed and outlining the group's conclusions, recommendations and points to be addressed in future research, published online last month in a special supplement to the journal *Movement Disorders*.

With members from Asia, Europe and North and South America, the task force critically reviewed, discussed and debated current practice and research before reaching consensus on issues facing treatment professionals. The group included [neurologists](#), neurosurgeons, neurophysiologists, neuropsychiatrists, neuropsychologists and nurses with expertise and experience in deep brain stimulation for dystonia.

Tagliati made major contributions to two articles reviewing postoperative issues: "Long-Term Management of DBS in Dystonia: Response to Stimulation, [Adverse Events](#), Battery Changes, and Special Considerations," and "Early Postoperative Management: Programming, Medication Changes, and Evaluations." He was the only member from

the United States in the group studying post-surgical management of patients undergoing deep brain stimulation.

"We reviewed the research literally paper by paper and line by line to come up with these documents," he said. "We separated credible papers from less authoritative papers and tried to extract what we could define as reliable evidence, separating solid data from that which is not as strong. Deep brain stimulation was developed in Europe and later adopted in the United States and many of the experts are in Europe because they've done it for a longer time. It was an honor for me to be assigned a leadership role in this kind of effort."

Dystonia causes muscles to contract, with the affected body part twisting involuntarily. There are several types of dystonia, with symptoms ranging from mild to severe. The Food and Drug Administration approved deep brain stimulation as a therapy for certain treatment-resistant dystonias in 2003 after approving it for essential tremor in 1997 and Parkinson's disease in 2002. The procedure recently was approved on a limited basis for obsessive-compulsive disorder.

"The fantastic thing is that with a certain type of dystonia – young-onset dystonia – DBS is not just a good therapy, but it can be a miraculous therapy, and I don't hesitate to use that term," said Tagliati, who has studied deep brain stimulation for more than a decade. "We have videos that are mind-boggling because they show kids in wheelchairs, with very bad distortions, who become normal. Not 80 percent better. Normal. They go and play basketball."

The device consists of electrical leads implanted in the brain and a stimulator located near the collarbone. The stimulator is programmed with a remote, handheld controller to modulate abnormal nerve signals that cause the uncontrollable muscle contractions of dystonia. According to studies cited by the task force, the procedure provides sustained

benefit for patients with dystonia for up to three years and evidence grows that positive outcomes may extend up to 10 years.

Tagliati said DBS therapy is not effective in all cases and device implantation and programming are not without risk. The mechanism and batteries themselves can be subject to failure, although newer devices and redundant power sources reduce these risks. "Our studies and the published article point out that adverse events occasionally occur with DBS, and these range from annoying to life-threatening, with speech abnormalities being the most common programming side effects. The article offers recommendations for predicting, reducing and dealing with adverse events."

Tagliati, who leads an educational course on deep brain stimulation programming every year at the American Academy of Neurology meetings, said the *Movement Disorders* articles define the current state of the art for this therapy for dystonia. The American Academy of Neurology is conducting a similar data review that may establish guidelines for those who treat dystonia with deep brain stimulation.

Tagliati and his counterpart at the University of California, Los Angeles – Jeff M. Bronstein, MD, PhD – recently led another panel of international experts in developing a consensus on key issues related to deep brain stimulation for Parkinson's disease. Their work, with insight and guidance for practitioners, was published in *Archives of Neurology* last October.

Dystonia is less common than Parkinson's disease – and has been more of a medical mystery, even among many movement disorders specialists. The principles of deep [brain stimulation](#) are similar for each disorder, but the devices are placed in slightly different locations. Proper placement and precise, individualized programming are critical to success, and Tagliati said many cases of seemingly "failed" therapy can

be corrected through expert fine-tuning of the device, along with proper medication management.

"Doctors are taught how to measure electricity coming from the muscles or from the brain, but they know little about 'injecting' electricity as a therapy. With DBS, there was a clinical science that needed to be developed," said Tagliati, who became interested in the procedure while completing a fellowship in movement disorders with top experts in the field. He has devoted his career to advancing the science of programming of the stimulator.

"We're establishing at Cedars-Sinai a center of excellence where [deep brain stimulation](#) is viewed as a clinical science, with the latest standards of surgical placement, programming and medication management," he said. "We're bringing together the academic activities that will increase knowledge and understanding among treatment professionals while improving the quality of care for individual patients."

Provided by Cedars-Sinai Medical Center

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