Psychogenic Dystonia Differs From Organic Disease
Megan Brooks  |  Feb 27, 2013

Patients with psychogenic dystonia have abnormal brain activity patterns that are significantly different from their counterparts with organic dystonia, a new imaging study suggests.

Unexpectedly, both psychogenic and organic dystonia patients have abnormal activity in the prefrontal cortex, refuting the widely held hypothesis that prefrontal abnormalities are strictly a marker of psychogenic disorders.

"We hope that the results of this study will lead not only to better understanding of [psychogenic] disorders but ultimately also pave the way for new treatment approaches for this poorly understood and difficult to manage problem," Anette Schrag, PhD, University College London Institute of Neurology, in the United Kingdom, told Medscape Medical News.

Finding abnormalities of brain function that are different from those in organic dystonia "opens up a way for researchers to learn how psychological factors can, by changing brain function, lead to physical problems," Dr. Schrag added in a statement.

The findings were published February 25 in Brain.

Distinctive Signature

The study included 6 patients with psychogenic dystonia, 5 with organic dystonia (DTY1 gene mutation positive) of the right leg, and 6 healthy control participants. They underwent positron emission tomography of regional cerebral blood flow during rest, during fixed posturing of the right leg, and during paced ankle movements.

Averaging regional cerebral blood flow across all tasks, the organic dystonia group showed abnormally increased regional cerebral blood flow, indicative of greater local neurometabolic rate, in the primary motor, premotor, and parietal cortices, together with decreased flow in the cerebellum.

In contrast, the psychogenic dystonia group showed an opposite pattern of activation, with abnormally increased blood flow in the cerebellum and basal ganglia and decreased flow in the primary motor cortex.

"Not only did the 2 groups of patients differ from healthy controls, they also differed significantly from each other in these regions," the authors write.

"What struck me was just how very different the abnormal brain function was in patients with the genetic and the psychogenic dystonia. Even more striking was that the differences were there all the time, whether the patients were resting or trying to move," James B. Rowe, PhD, from the Department of Clinical Neurosciences, University of Cambridge, United Kingdom, who worked on the study, said in a statement.

The investigators note that this study provides the first evidence that there is a "distinctive pathophysiological signature" that separates organic from psychogenic dystonia.

However, they also observed abnormal activation in the right dorsolateral prefrontal cortex in both organic and psychogenic dystonia during movement.
"Abnormal activity in the prefrontal cortex, previously thought to be instrumental in the pathogenesis of psychogenic disorders, was seen in a similar way in both conditions, suggesting that regulating mechanisms in this area play a role in both conditions," said Dr. Schrag.

**Novel Study**

This study was conducted in a "fascinating group of patients with conversion disorder (or functional neurological disorder)," Valerie Voon, MD, from the University of Cambridge, who was not involved in the study, told *Medscape Medical News*.

Conversion disorder is a mental health condition in which a person has blindness, paralysis, or other nervous system (neurologic) symptoms that cannot be explained by medical evaluation.

Dr. Voon noted that the disorder has "overlaps with mass hysteria," which has most recently been in the popular press with the onset of Tourette's-like tics in New York State, as reported by *Medscape Medical News*.

"This patient population, while frequent in neurology clinics, is also a group that is conventionally difficult to study, hence the small sample sizes," Dr. Voon noted. "The disorder marked the beginning of psychoanalysis and was initially understood to be related to psychological issues. We now have moved towards attempting to understand the neural correlates of the disorder," she said.

The current study, Dr. Voon said, was "well-designed" and "carefully controlled for movement symptoms and, more importantly, compared the functional group with a group with 'organic' dystonia. Most studies thus far have compared functional symptoms with healthy volunteers. Here they show differences also from 'organic' dystonia."

Dr. Schrag said that her team is now considering further studies to investigate how the abnormal brain activity in psychogenic dystonia might be modified.

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