Psychiatrists have long thought that the brains of patients with borderline personality disorder (BPD)—a mental illness characterized by an instability in mood and interpersonal relationships—were the same as those of healthy individuals. But new research from Mount Sinai suggests that there are distinct neurological differences in patients with the mood disorder.

Harold Koenigsberg, MD, Professor of Psychiatry, presented these findings at a recent meeting of the American Psychoanalytic Association. The research was funded by the National Institutes of Mental Health and will appear in Psychiatric Research: Neuroimaging later this year.

“One of the main symptoms of borderline personality disorder is the inability to regulate emotions. [Patients] have a rollercoaster life—they become intensely depressed or anxious very quickly; sometimes the intense mood swings can lead to suicide,” he said.

Dr. Koenigsberg continued, “Our research is trying to understand what is different about the way these patients’ brains regulate emotion.”

Dr. Koenigsberg found that certain neural circuits in the brain light up with activity when BPD patients experience these inflammatory emotional responses.

Dr. Koenigsberg presented the results of two studies. In the first, 19 BPD patients and 17 healthy individuals viewed pleasant and disturbing images for six seconds. Using MRI technology, researchers scanned their brains as they viewed these images.

When Dr. Koenigsberg compared the brain scans of the two groups, he discovered that when the BPD patients viewed the disturbing images, they experienced greater blood flow—an indicator of neural activity—to the amygdala, the area of the brain that is responsible for emotion regulation, and to the visual processing areas of the brain.

“Understanding the neural pathways for processing emotion that are characteristic of BPD patients may suggest new treatments—both medications and psychotherapeutic—for the emotional instability they experience and may also provide a marker to guide genetic studies,” said Dr. Koenigsberg.

During the second study, participants were asked to view a series of disturbing images and to try to consciously reduce their negative reactions to the disturbing pictures. The areas of the brain that regulate attention and resolve conflict—the intraparietal sulcus and the anterior cingulate cortex—lit up in the healthy participants, but showed less activity in the BPD patients.

Dr. Koenigsberg says this lack of regulation makes it easy for BPD patients to impulsively characterize people as either all good or all bad, which sets them up for stormy and disappointing interpersonal relationships.

“We hope these findings will help educate patients and psychotherapists about how to treat the condition. Someday it may even help identify medications that can better control these activations in the brain.”