Brain on Fire

Is inflammation at the root of bipolar disorder?

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Inflammation is our body's way of responding to injury or threat. In the simplest terms, inflammation works like this: If our cells are damaged or overworked, or if we are infected with a germ, then our bodies release microscopic proteins and amino acids that alert other cells to the problem.

There are dozens—probably even hundreds—of inflammatory proteins, and scientists are finding new ones every day. When too many of them flood our system over a sustained period of time, it's referred to as chronic inflammation. This can cause extensive tissue damage in the brain, clog up our arteries and ultimately provide an ideal environment for cancers to develop.

Similarly, new scientific evidence shows that brain cell inflammation might be at the root of mental illness. Several studies have found that microscopic structures associated with cellular inflammation in the brain were more likely to be present in the cerebrospinal fluid of people with schizophrenia than people without the disorder.

Such findings inspired a research team led by Lennart Wetterberg, MD, PhD, from the Karolinska Institute in Stockholm, to explore whether these microstructures would be found in people with bipolar disorder. To test this hunch, the researchers tapped the spinal fluid of 31 people with bipolar I (which is associated with severe mania), 25 people with bipolar II (which is associated with a milder form of mania) and 20 people without bipolar disorder.

Ultimately, Wetterberg and his colleagues found the inflammatory microstructures in 45 of the people with bipolar disorder. These people were more likely to have bipolar I and to have experienced more severe manic episodes. In other words, the more severe the psychological disease, the more likely a person was to have these proteins.

While the study of inflammation and mental illness is in its infancy, the evidence that inflammation plays a central role in psych disorders is gathering rapidly and coming in from all sides. In fact, as a number of recent studies have found, the success of psych meds might be linked to their ability to reduce inflammation in the brain and encourage the formation of new healthy brain cells rather than their impact on specific neurotransmitters, such as serotonin.

We haven’t yet identified what causes inflammation in the first place—inflammation is likely spurred on by substances such as tobacco smoke and sugar as well as excess fat in the gut. In fact, our own stress hormones can also set off a chain reaction of inflammation that ultimately damages healthy cells. We also don’t know why some people seem more vulnerable to inflammation than others. It will probably take decades to finally understand the connection between inflammation and bipolar disorder.

Inflammation is now implicated as the cause of myriad health concerns, ranging from cancer to cardiovascular disease—even aging itself. If it turns out that inflammation is indeed at the root of some mental illnesses, and that we can easily and consistently measure it, this knowledge could radically transform both the diagnosis and the treatment of psychological disorders.

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