

Link Between Serotonin and Suicide Found with New Brain Imaging Methods

Embargo: January 1, 2003 (Toronto): Not all people with clinical depression have low serotonin levels according to a study published in the January issue of *The American Journal of Psychiatry*.

“There is a common misunderstanding that serotonin is low during clinical depression. It mostly comes from the fact that many antidepressants raise serotonin. This is a bit like saying that pneumonia is an illness of low antibiotics because we treat pneumonia with antibiotics,” says Dr. Jeffrey Meyer, the principle investigator of the study, conducted by researchers at the Centre for Addiction and Mental Health (CAMH) and the University of Toronto.

According to Dr. Meyer, the main reason people thought serotonin was abnormally low during depression is that suicide victims have more serotonin binding sites, which demonstrates lowered serotonin levels. However, not all people who are victims of suicide have clinical depression (probably about half do) and there are other psychiatric illnesses that increase the risk for suicide.

The researchers used a brain imaging technique called positron emission tomography to scan people’s brains for serotonin binding sites during episodes of clinical depression. What they found was that the serotonin abnormality happened in brains of people who had clinical depression and severely negativistic thinking. The study found that low serotonin levels can increase negativistic thinking. This is important because severely negativistic thinking is a major risk factor for suicide.

Dr. Meyer says that this is an important finding in that some family members of people who commit suicide blame themselves. “It’s important for people to understand that often the severely negativistic perspective of their loved ones in the midst of a clinical depression can be caused by chemicals in the brain,” he says.

Dr. Meyer is very positive about the future of treatment for depression with the aid of the brain imaging technique, “In the past, we could not look at brain chemicals in people - the brain was like a black box. With this new imaging technology, we can figure out how abnormal brain chemicals cause symptoms. If we can understand a mechanism for each symptom, we should be able to better understand the illness.”

So what are antidepressants that raise brain serotonin doing? Dr. Meyer suggests that replacing low brain serotonin is only a part of what antidepressants do. Other researchers have shown that raising brain serotonin gives brain cells instructions to grow, thrive and survive. Our understanding of clinical depression is getting more complicated, but this will lead to new advances in treatment.

The Centre for Addiction and Mental Health (CAMH) is a Pan American Health Organization and World Health Organization Collaborating Centre and a teaching hospital fully affiliated with the University of Toronto.