Blood test might predict how well a depressed patient responds to antidepressants

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Loyola University Medical Center researchers are reporting what could become the first reliable method to predict whether an antidepressant will work on a depressed patient.

The method would involve a blood test for a protein called vascular endothelial growth factor (VEGF). A Loyola study found that among depressed patients who had higher than normal blood levels of VEGF, more than 85 percent experienced partial or complete relief from depression after taking escitalopram (brand name Lexapro). By comparison, fewer than 10 percent of depressed patients who had low levels of VEGF responded to the drug.

"This would be the first time we would have a predictor for how well a patient would respond to an antidepressant," said Angelos Halaris, MD, PhD, first author of the study. Halaris presented results during the 2011 annual meeting of the Society of Biological Psychiatry and the 4th Annual Illinois Brain, Behavior and Immunity Meeting.

About 60 percent of depressed patients do not respond fully to the first prescribed medication. Consequently, doctors often must prescribe a different medication again and again before finding one that works. "It would greatly benefit our patients if we could predict ahead of time whether a given medication would be effective for a certain patient," Halaris said.

The Loyola study involved 35 patients who took escitalopram for major

depressive disorder. Escitalopram belongs to a class of antidepressants called selective serotonin reuptake inhibitors (SSRIs). Other common SSRIs are Prozac®, Paxil® and Zoloft®.

Scientists aren't certain why SSRIs work in some patients but not in others. One possible mechanism is that SSRIs help restore a chemical balance in the brain. Some scientists recently have proposed a second possible mechanism, called neurogenesis -- SSRIs help to regenerate brain cells in specific parts of the brain that have atrophied in depressed patients.

The Loyola study supports the neurogenesis theory. It appears that escitalopram, the SSRI used in the Loyola study, jump-starts brain cells that have become inactive. This regeneration is fueled by VEGF. In the brain, VEGF stimulates the growth of blood vessels and works in other ways to keep brain cells healthy and active.

It appears that in patients with higher levels of VEGF, there was more regeneration, helping to reduce depression. Conversely, in patients with lower VEGF levels, there was less regeneration of brain cells and less relief from depression.

If the finding is confirmed by further studies, it could lead to a blood test that would help physicians tailor treatment. If, for example, a patient had low levels of VEGF, the physician might skip SSRIs and try alternative classes of antidepressants, such as bupropion, or alternative therapies, such as psychotherapy or Transcranial Magnetic Stimulation (TMG). These treatments are all available at Loyola University Medical Center.

Currently, a VEGF blood test would be quite expensive if it were performed for a patient. But the cost likely would come down significantly if a VEGF test were to become widely used, Halaris said.

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