

Women more depressed and men more impulsive with reduced serotonin functioning

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Women and men appear to respond differently to the same biochemical manipulation. Major depressive disorder (MDD) is one of the most common mental disorders, and it is also one of the most studied. It is already known that reduced serotonin transmission contributes to the pathophysiology, or functional changes, associated with MDD and most of today's most popular antidepressants block the serotonin "uptake site", also known as the transporter, in the brain. It is also known that people with MDD are frequently found to have impaired impulse control.

A new study being published in the September 15th issue of *Biological Psychiatry* now reports on important sex and genetic differences in the way that men and women react to reductions in serotonin function, specifically in terms of their mood and impulsivity.

Using a technique in healthy participants called acute tryptophan depletion, which decreases serotonin levels in the brain, Walderhaug and colleagues found that men became more impulsive, but did not experience any mood changes in response to the induced chemical changes. However, women in this study reported a worsening of their mood and they became more cautious, a response commonly associated with depression. The researchers also discovered that the mood lowering effect in women was influenced by variation in the promotor region of the serotonin transporter gene (5-HTTLPR).

One of the study's authors, Dr. Espen Walderhaug, explains, "We were surprised to find such a clear sex difference, as men and women

normally experience the same effect when the brain chemistry is changed... Although we have the same serotonergic system in the brain, it is possible that men and women utilize serotonin differently.”

These findings highlight the complexity of studying and treating these disorders, as the interactive effects of gender and genetic coding impacted the outcomes in the men and women when their serotonergic functions were disrupted. Dr. Walderhaug comments that their study’s findings “might be relevant in understanding why women show a higher prevalence of mood and anxiety disorders compared to men, while men show a higher prevalence of alcoholism, ADHD and impulse control disorders.”

John H. Krystal, M.D., Editor of Biological Psychiatry and affiliated with both Yale University School of Medicine and the VA Connecticut Healthcare System, adds that the response patterns that have emerged in these findings are “the beginnings of an understanding for these sex-related effects.” Ultimately, it is hoped that these findings further advance the ability to quickly and more accurately treat patients.

Source: Elsevier

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