



Center for Behavioral Health Studies

Researchers Investigate Cocaine “Abstinence Syndrome”

Researchers have long focused on motivation as the centerpiece of the addiction puzzle. Observations have shown that in many addicted individuals, compulsive drug-seeking behavior overtakes the most fundamental motivators, including food and sex. Now, studies are beginning to examine the powerful and long-lasting effects of drugs on mood.

People who have recently stopped abusing stimulant drugs commonly experience "abstinence syndrome".

Common problems with this syndrome include low energy, irritability, restlessness, an inability to feel pleasure and problems with concentration. Anxiety and panic attacks also are sometimes associated with cocaine abstinence. Research efforts are now trying to improve current therapy's to alleviate these symptoms and prevent relapse.

Research Outline

Studies recently conducted by the National Institute on Drug Abuse (NIDA), concentrated on the impact of cocaine on the neurotransmitter norepinephrine (NE). This is one of the two neurochemicals most responsible for mood.

From past studies, we know stimulation of brain cells by serotonin and NE is central to positive mood and coping with stress. One recent study suggests that cocaine may compromise NE's ability to stimulate brain cells by altering the α_2 -adrenergic receptor, on the surfaces of the cells.

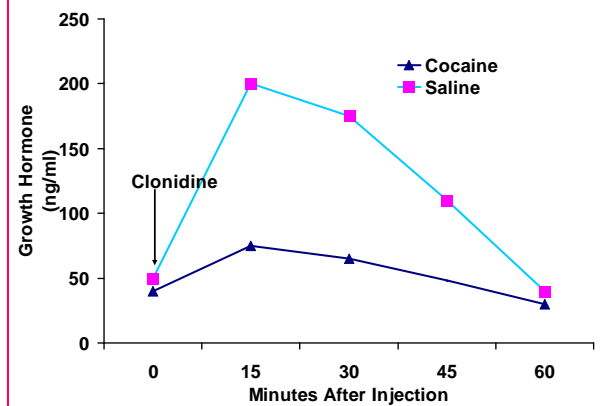
To assess the adrenergic system in cocaine-exposed, now "abstinent" rats, the researchers used the clonidine challenge procedure, which indirectly indicates α_2 -adrenergic receptor activity. Confirming the researchers' hypothesis, the previously cocaine-exposed animals showed a blunted GH response.

The findings suggest that cocaine consumption followed by cessation lower recovering individuals' moods by desensitizing their α_2 -adrenoreceptors.

Since people with depression secrete less GH in response to the clonidine challenge than do those without the condition, clinical findings are suggesting links between NE receptor function, mood disorders, and cocaine withdrawal.

"It makes sense physiologically that the adrenergic system plays an important role in addictions", suggests Mona L. Sumner, Chief Operations Officer at Rimrock Foundation.

Clonidine Challenge Suggests Cocaine Abuse Desensitizes the Adrenergic System



Clonidine challenge increased GH secretion in the saline-treated rats, but prior cocaine exposure suppressed this effect.

Summary

Work by scientists suggests that cocaine abuse leads to longer term desensitization of the brain involved in reward.

Some researchers are now suggesting that the desensitized adrenergic system increases vulnerability to further norepinephrine disturbances, for example, those

caused by stress or drug re-exposure, which may increase relapse risk.

A growing body of animal and clinical research suggests important connections between the adrenergic system, mood, anxiety, and the depression experienced in overcoming cocaine addiction.

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