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Mood Disorders in Methamphetamine Abusers Linked to Changes in Brain Metabolism

Research Findings
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Impaired metabolism in one part of the brain, the striatum, may be the culprit in methamphetamine-linked mood disturbances. In a study similar to the one reported in the accompanying article (see "[Long-Term Abstinence Brings Partial Recovery From Methamphetamine Damage](#)"), 17 chronic abusers of methamphetamine underwent positron emission tomography (PET) brain scans in the first week of rehabilitative treatment, a time when many patients report high levels of depression and anxiety. The scans revealed that metabolic activity in the striatum varied with the severity of the patients' affective symptoms.

The patients in the study (11 men and 6 women, with an average age of 34.5 years) had used methamphetamine, on average, for about 10 years. PET studies also were conducted on a comparison group of 18 volunteers who had never taken the drug but had comparable histories of marijuana and alcohol abuse. The lead investigator on the NIDA-funded study was Dr. Edythe London of the University of California, Los Angeles.

All participants completed research questionnaires designed to assess levels of depression and of generalized (trait) and transitory (state) anxiety. For methamphetamine abusers, the average depression inventory score was 9.8 (scores between 9 and 15 are considered minimal to mild depression) compared with an average score of 1.1 for the comparison group. On a 1-to-4 scale of anxiety, abusers scored an average 1.9 for state anxiety and 2.2 for trait anxiety (compared with 1.4 and 1.5, respectively, for the comparison group). The higher measures of mood disturbances among methamphetamine abusers corresponded to differences, relative to the comparison group, in regional brain metabolism.

"It appears that, at least in early abstinence, methamphetamine abusers who report negative mood states have dysfunctions in these brain regions," says Dr. London. "The abnormalities in metabolism that we see involve brain regions that other investigations have implicated in mood regulation."

There is no pharmacological treatment for methamphetamine abuse, and negative moods can hinder behavioral therapy, which relies on patients' voluntary participation. "Early abstinence is the toughest stage of treatment for methamphetamine abuse," says Dr. Joseph Frascella of NIDA's Division of Clinical Neuroscience, Development, and Behavioral Treatments. "It's in the early stage that mood disturbances may derail or complicate the most effective treatment, cognitive behavioral therapy. Methamphetamine abuse and addiction do not exist in isolation, and this study suggests that associated depression and anxiety also must be addressed in treatment."

Source

London, E.D., et al. Mood disturbances and regional cerebral metabolic abnormalities in recently abstinent methamphetamine abusers. *Archives of General Psychiatry* 61(1):73-84, 2004.

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