

New Study Suggests Methamphetamine Withdrawal is Associated with Brain Changes Similar to Those Seen in Depression and Anxiety

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Results of a new study indicate that people who have recently stopped abusing the powerfully addictive drug methamphetamine may have brain abnormalities similar to those seen in people with mood disorders. The findings suggest practitioners could improve success rates for methamphetamine users receiving addiction treatment by also providing therapy for depression and anxiety in appropriate individuals. The study is published in the January 2004 issue of the journal Archives of General Psychiatry.

"Methamphetamine abuse is a grave problem that can lead to serious health conditions including brain damage, memory loss, psychotic-like behavior, heart damage, hepatitis, and HIV transmission," says Dr. Nora D. Volkow, director of the National Institute on Drug Abuse (NIDA), National Institutes of Health, which funded the study. "Currently, no medication exists to treat abuse or addiction to amphetamines or amphetamine-like compounds; however, drug counselors and other health professionals have successfully used behavioral interventions to treat addiction. Treatment outcomes may improve if associated mental conditions are addressed concurrently with addiction."

Dr. Edythe London and her colleagues at the University of California Los Angeles, the University of California Irvine, and NIDA's Intramural Research Program used positron emission tomography -- PET, a technology to image brain activity -- to compare glucose metabolism in the brains of 17 methamphetamine abusers who had stopped using the drug 4-7 days before their participation in the study, and 18 nonabusers. The methamphetamine abusers averaged a 10-year history of drug abuse that included consuming an average of 4 grams of methamphetamine per week. They said they had used the drug at least 18 of the preceding 30 days.

All participants responded to questions about their drug use, and underwent a PET scan to measure how their brains used glucose while they performed an attention task. On the day of the scan, participants rated their symptoms of depression and anxiety. The methamphetamine abusers also rated their cravings for the drug within 48 hours of the scan. The scientists found that methamphetamine abusers reported higher ratings of depression and anxiety than nonabusers.

The PET scans showed that the two groups exhibited significant differences in glucose metabolism in specific brain regions. In methamphetamine abusers, glucose metabolism was lower in brain regions linked to depressive disorders, depressed mood, and sadness. It was higher in brain regions linked to anxiety and drug cravings.

"Improving our awareness of substance abuse as a condition that does not exist in isolation will contribute to more effective prevention and treatment interventions," says Dr. Volkow.