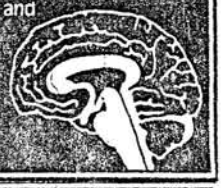



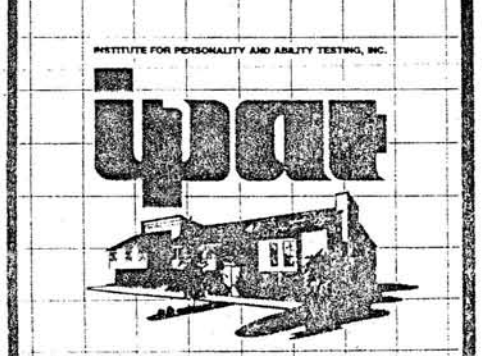




## Limbic response seen in borderline cases

By Carol Turkington
Staff Writer

WASHINGTON

Borderline personality disorder may have biological factors which predispose patients to symptoms, according to new findings by federal mental health researchers.

New evidence suggests that the disorder may develop in those with a low threshold for activation of limbic structures, according to Rex Cowdry, clinical director of intramural research at the National Institute of Mental Health. The limbic system is an area deep within the brain closely connected with the regulation of mood and aggression. Current theories see impaired ego function and poor ego development stemming from childhood experiences as the cause of mood swings and lack of behavioral control typical of this disorder.

Researchers have found that many borderline patients also showed the abrupt and transient mood changes, perception distinctions and feelings of deja vu commonly observed during seizures of the limbic system. This led to speculation that low threshold for activation of the limbic system might be involved in the development of borderline personality disorder.

Procaine, a local anaesthetic which activates the limbic system, produced dysphoria in 10 out of 15 borderline patients and in none of the 15 controls. The dysphoria seems associated with the appearance of high frequency EEG activity over the temporal lobe of the brain — a limbic structure.

In a separate drug treatment study with 16 borderline patients, blind raters noted significant symptom improvement when patients were given MAO inhibitor antidepressants and anticonvulsants. They noted no improvement in patients given antianxiety agents, antipsychotic drugs or a placebo.

The MAO inhibitor produced overall improvement in borderline patients in a number of mood measures, impulsivity and suicidality. The anticonvulsant significantly improved these measures also, but the positive effects on mood were less pronounced and the improvement in behavioral control was more striking.

The decrease in impulsive and self-injurious behavior produced by the anti-convulsants support theories that low thresholds for excitation in the limbic system contribute to the behavioral problems common in this disorder, Cowdry said. The benefits of antidepressants suggest that the disorder is also related to more typical mood disorders.

For more information, contact Rex Cowdry, clinical director of the NIMH Intramural Research Program, NIH Clinical Center, Building 10, Room 3N-238, Bethesda, MD 20205 (301) 496-4588. ■

## Alcohol abuse linked to levels of serotonin

WASHINGTON

Alcohol abuse may exacerbate neurochemical processes that are associated with violence, according to federal substance abuse researchers.

Low levels of serotonin turnover are initially improved by alcohol. But continued abuse depletes those levels. Serotonin is believed to play a role in impulsive behavior, low blood glucose and biological rhythm disturbances in humans, according to Markku Linnoila, clinical director of the National Institute on Alcohol Abuse and Alcoholism.

In studies with 67 patients, Linnoila found that impulsive violent offenders with antisocial or intermittent explosive personality disorders and impulsive arsonists have low levels of the major metabolite of serotonin in cerebrospinal fluid. They tend toward hypoglycemia after consuming large amounts of sugar, and suffer more often from insomnia than do normal subjects. Most abuse alcohol.

Serotonin is an important neurotransmitter in the regulation of aggression in animals. Further, biological rhythm disturbances may occur because serotonin is the major neurotransmitter regulating the functioning of the superchiasmatic nuclei, which affects blood sugar and body rhythms. Linnoila has found that these violent patients most often are aggressive when hypoglycemic.

Linnoila speculated that the serotonergic deficit trait could be familial, because depressed nondrinkers with family histories of alcoholism have lower serotonin turnover than those with no such history.

Previous studies around the world have implicated low serotonin turnover in the brain as an important factor in suicide attempts in depressed patients, in aggressive patients and in alcoholics. Others showed that impulsive violent offenders had a tendency to develop hypoglycemia after eating sugar.

Linnoila noted that a special hypoglycemic diet might help a violent offender, since violent outbursts were found to occur during hypoglycemic bouts. No studies have been done to investigate this, he noted, and he cautioned that not all hypoglycemics are aggressive.

For more information, contact Markku Linnoila, clinical director of the National Institute on Alcohol Abuse and Alcoholism, NIH Clinical Center, Building 10, Room 3C-218, Bethesda, MD 20205 or call (301) 496-9705. ■

— By Carol Turkington

## Brain damage found with designer drugs

WASHINGTON

Repeated use of amphetamines and related designer drugs such as Ecstasy produces potentially irreversible brain damage, according to two psychologists at the University of Chicago.

Methamphetamine depletes levels of the neurotransmitters dopamine and serotonin in specific regions of the brain, according to Charles Schuster and Lewis Seiden, and destroy serotonin neurons. Serotonin depletion is even greater with designer drugs like MDA and Ecstasy.

Unfortunately, Schuster noted, the levels needed to produce effects in users are very close to neurotoxic levels.

Behavioral evidence indicates that serotonin neurons play a major role in pain perception and sleep and affect regulation and expression of aggressive and sexual behavior.

Decreased levels of dopamine have been implicated in a host of problems in the elderly, including Parkinson's disease. Dopamine levels in normal individuals begin to decrease by 10 percent for each decade after age 30. Heavy drug users could prematurely lower their levels of dopamine to the point where, Schuster said, a 45-year-old former drug user might show symptoms of a 70-year-old.

Researchers found that methamphetamine causes long-lasting and possibly permanent decreases in the enzymes that synthesize the two transmitters. They also found a decrease in the number of sites that take up the two transmitters, which suggests a reduction in the number of actual nerve endings.

The neurotoxic effects on the transmitters occur when they are converted by the drug into neurotoxins. The neurons that had released the parent dopamine or serotonin then take up these toxins and are destroyed by them. It is the first demonstration of a neurotransmitter being modified to a neurotoxin.

In animal studies of some of the amphetamine analogs or "designer drugs" such as MDA (3,4-methylenedioxyamphetamine) and Ecstasy (MDMA or 3,4-methylenedioxymethamphetamine), serotonin levels and transmitter uptake sites were depleted after a single dose. They never regained their former levels.

There is little data to suggest that MDMA, which had been used by psychiatrists in the past, is an effective psychotherapeutic agent, Schuster said. Furthermore, lab studies suggest it could harm serotonin cells in the brain.

For further information, contact Lewis Seiden, Dept. of Pharmacology, 947 E. 58th St., Abbott Hall, Room 109, (312) 962-9640 or Charles Schuster, Dept. of Psychiatry, 5841 S. Maryland Ave., Box 411, (312) 962-6360, both at the University of Chicago, Chicago, IL 60637. ■

— By Carol Turkington