Reduced Hippocampus Volume Tied to Cannabis Use

BY MARY ANN MOON
Contributing Writer

Heavy cannabis users show marked reduction in hippocampus volume on high-resolution 3-T MRI imaging, investigators have reported.

The volume reductions appear to correlate with the degree of exposure to the drug, according to Murat Yücel, Ph.D., of the University of Melbourne and associates.

These findings "challenge the widespread perception of cannabis as having limited or no neuroanatomical sequelae" and suggest that heavy use "may indeed be toxic to human brain tissue," the investigators noted (Arch. Gen. Psychiatry 2008;65:694-701).

Few brain imaging studies have been conducted in cannabis users, and the results have been inconsistent. "Indeed, despite strong evidence of neurotoxicity in the animal literature, to our knowledge no neuroimaging study has examined the neurobiologic sequelae of long-term heavy cannabis use while controlling for the important confounds of polydrug abuse and co-occurring psychiatric disorders," Dr. Yücel and his associates said.

They used high-resolution 3-T MRI to assess volume in the hippocampus and the amygdala, two brain regions rich in cannabinoid receptors, in 15 men (mean age 40 years) who were regular heavy cannabis users and in 16 healthy nonusers matched for age, premorbid intelligence, years of education, and anxiety symptoms. None of the subjects had any medical, neurologic, or psychiatric conditions, and none abused alcohol or other drugs. The mean duration of regular use was 19.7 years.

The cannabis users showed a significant, 12% reduction in hippocampus volume and a smaller but still significant 7% reduction in amygdala volume, compared with the control subjects, said Dr. Yücel and his associates, who had no financial conflicts to disclose.

The cannabis users also reported significantly greater symptoms on an assessment of subthreshold psychotic symptoms than did the controls, and they showed significantly poorer performance on a test of verbal learning ability.

There also was a significant inverse association between cumulative cannabis exposure in the preceding 10 years and hippocampus volume in the left, but not the right, hemisphere.

"Previous functional imaging studies have found reduced left hippocampal activation during cognitive performance in cannabis users, and there is evidence to suggest that hippocampal abnormalities in psychiatric disorders such as schizophrenia are more prominent in the left hemisphere," they pointed out.

All of which suggests "that the left hippocampus may be particularly vulnerable to the effects of cannabis exposure and may be more closely related to the emergence of psychotic symptoms," Dr. Yücel and his associates said. ■

Naltrexone Tx Inhibits Pleasures From Drinking

Toronto — Long-term treatment with extended-release naltrexone selectively inhibited the hedonic response associated with drinking alcohol while sparing the experience of pleasure associated with other activities such as reading and listening to music, a study has found.

A total of 74 patients who participated in a 4-year trial comparing two doses of injectable extended-release naltrexone (Vivitrol) with placebo or a 3-year trial comparing the injectable drug with the oral formulation agreed to participate in an extension phase involving high- or low-dose naltrexone and a questionnaire, according to Dr. Charles O'Brien, Kenneth Appel Professor of Psychiatry, University of Pennsylvania, Philadelphia.

The activities ranged from drinking alcohol to eating good food, and for each activity, respondents rated how pleasurable the activity was, Dr. O'Brien reported in a poster at the annual conference of the American Society of Addiction Medicine.

Those who had consumed alcohol within the previous 90 days showed relatively low ratings of pleasure from drinking.

Dr. O'Brien reported no financial conflicts of interest.

—Nancy Walsh