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Opioid-blocking medication reduces brain's response to alcoholism cues

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Researchers at Harvard-affiliated McLean Hospital have produced the first evidence that the opioid blocker extended-release injectable naltrexone (XR-NTX) is able to reduce the brain's response to cues that may cause alcoholics to relapse.

In data presented today at the annual meeting of the American Psychiatric Association, Scott Lukas, PhD, director of the Neuroimaging Center at McLean, located in Belmont, Mass., said the findings help in the understanding of how XR-NTX works in reducing the craving for alcohol and may potentially help predict which people will respond best to the drug.

"These data are quite important since relapse remains a significant challenge in treating patients with alcohol dependence," Lukas said. "It looks to us that XR-NTX can help people remain abstinent by reducing the importance of these cues so they are less likely to relapse."

XR-NTX works by blocking opioid receptors in the brain and was approved for the treatment of alcohol dependence in 2006. XR-NTX is commercially available as Vivitrol®.

"We were trying to better understand the biological basis of how XR-NTX reduces alcohol consumption," Lukas said. "These data clearly demonstrate that XR-NTX reduced craving response in the brain when patients were presented with alcohol cues."

In the study, which has not yet been published, the researchers used brain imaging as a tool to document how XR-NTX works when a person is placed in a situation deemed risky for alcohol relapse.

A total of 28 alcohol-dependent individuals were tested with a BOLD (Blood Oxygen Level Dependent) fMRI scan while shown pictures of bottles or glasses of alcoholic beverages and exposed to odors of their particular alcoholic beverage of choice.

Under double-blind conditions, fifteen of the subjects were given an injection of a XR-NTX and thirteen subjects were given a placebo injection. The study did not test the older form of naltrexone, which is taken daily in pill form.

Initially, the subjects were asked to self-report their cravings for alcohol after being exposed to the alcohol cues. All subjects reported that their cravings increased in the first few minutes after exposure to the cues.

However, those on XR-NTX reported that their cravings started to diminish after a few minutes, while those on placebo injection reported no such decrease in craving levels.

fMRI images also revealed that the pictures and odors induced sharply contrasting brain blood flow activation patterns. Scans were taken at baseline and again two weeks after the injection. Scans of subjects on placebo were virtually unchanged after two weeks. But those subjects on XR-NTX showed significant reductions in activation patterns in areas of the brain having to do with cognitive and emotional processing and reward circuitry on the second scan following exposure to the alcohol cues.

"The areas in the brain associated with craving did not light up nearly as much in patients treated with XR-NTX compared to patients on

placebo," Lukas said. "These data suggest that those patients on XR-NTX were responding less strongly to the alcohol cues after being on the drug for only two weeks," he added.

Lukas cautioned, "There is no single magic bullet, but having a choice of medications at our disposal gives physicians an increased chance to better treat a wide range of addictions."

Understanding cravings and how medication can play a role in controlling them will help to improve treatment for patients with alcohol dependence.

Provided by McLean Hospital

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