News Summary

P1-389: Fasting biases brain reward systems toward high-calorie foods

Dieters should eat breakfast, because a new study shows that skipping the first meal of the day triggers your brain activity to make you prefer high-calorie foods. The results will be presented Wednesday at The Endocrine Society's 91st Annual Meeting in Washington, D.C.

Although some people try to lose weight by skipping meals, past studies have shown that people who skip breakfast actually tend to eat more high-calorie foods and be at increased risk of weight gain. Now researchers in England believe they may have one explanation of how this happens.

A group from Imperial College London used functional magnetic resonance imaging—MRIs of brain activity—to show that when people fasted by skipping breakfast, their brain "reward" centers were activated more by the sight of high-calorie than low-calorie foods.

However, when the same 20 healthy, non-obese subjects ate breakfast on another day, functional MRIs obtained about 90 minutes after eating showed no significantly greater activation of the brain's reward centers while subjects viewed pictures of high-calorie foods.

The high-calorie foods included cake, chocolate and pizza, whereas low-calorie foods included salad, vegetables and fish.

Functional MRI findings correlated with the subjects' ratings of how much the food pictures appealed to them, the authors reported. When they skipped breakfast, subjects rated pictures of high-calorie foods as more appealing than those of low-calorie foods. When they ate breakfast, however, they did not express a strong preference for high-calorie foods.

The order in which subjects fasted or ate breakfast was determined randomly, to avoid bias.

The study results confirm current medical advice, said lead author Dr. Tony Goldstone, MD, PhD, a consultant endocrinologist with the MRC Clinical Sciences Centre at Imperial College London.

"Our results support the advice for eating a healthy breakfast as part of the dietary prevention and treatment of obesity," Goldstone said. "When people skip meals, especially breakfast, changes in brain activity in response to food may hinder weight loss and even promote weight gain."

The study findings also hold hope for future new treatments of obesity, he said. "The hope is to develop drugs that prevent this activation of the brain's reward circuitry and thus reduce the appeal of high-calorie over low-calorie foods."

Brain reward centers are areas of the brain that are involved in monitoring the pleasure and rewarding value of food and in signaling the motivation to eat. The taste, smell and sight of food activate these reward centers, according to Dr. Goldstone.

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