

Researchers suppress 'hunger hormone'

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Johns Hopkins scientists report success in significantly suppressing levels of the "hunger hormone" ghrelin in pigs using a minimally invasive means of chemically vaporizing the main vessel carrying blood to the top section, or fundus, of the stomach. An estimated 90 percent of the body's ghrelin originates in the fundus, which can't make the hormone without a good blood supply.

"With gastric artery chemical embolization, called GACE, there's no major surgery," says Aravind Arepally, M.D., clinical director of the Center for Bioengineering Innovation and Design and associate professor of radiology and surgery at the John Hopkins University School of Medicine. "In our study in pigs, this procedure produced an effect similar to bariatric surgery by suppressing ghrelin levels and subsequently lowering appetite."

Reporting on the research in the September 16 online edition of *Radiology*, Arepally and his team note that for more than a decade, efforts to safely and easily suppress grehlin have met with very limited success.

Bariatric surgery - involving the removal, reconstruction or bypass of part of the stomach or bowel - is effective in suppressing appetite and leading to significant weight loss, but carries substantial surgical risks and complications. "Obesity is the biggest biomedical problem in the country, and a minimally invasive alternative would make an enormous difference in choices and outcomes for obese people," Arepally says.

Arepally and colleagues conducted their study over the course of four weeks using 10 healthy, growing pigs; after an overnight fast, the animals were weighed and blood samples were taken to measure baseline ghrelin levels. Pigs were the best option, he says, because of their human-like anatomy and physiology.

Using X-ray for guidance, members of the research team threaded a thin tube up through a large blood vessel near the pigs' groins and then into the gastric arteries supplying blood to the stomachs. There, they administered one-time injections of saline in the left gastric arteries of five control pigs, and in the other five, one-time injections of sodium morrhuate, a chemical that destroys the blood vessels.

The team then sampled the pigs' blood for one month to monitor ghrelin values. The levels of the hormone in GACE-treated pigs were suppressed up to 60 percent from baseline.

"Appetite is complicated because it involves both the mind and body," Arepally says. "Ghrelin fluctuates throughout the day, responding to all kinds of emotional and physiological scenarios. But even if the brain says "produce more ghrelin," GACE physically prevents the stomach from making the hunger hormone."

Source: Johns Hopkins Medical Institutions

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