In the short run, a high-fat diet may help minimize heart attack damage

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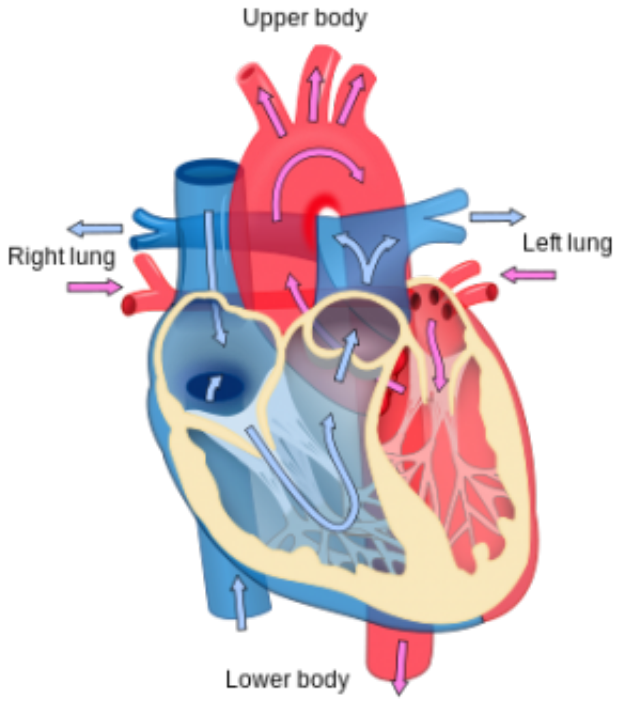

Heart diagram. Credit: Wikipedia

It's well known that over the long run, a high-fat diet increases the risk of heart attack and stroke.

But a new study has found that a high-fat diet, eaten one day to two weeks days before a heart attack, actually reduced heart attack damage in mice by about 50 percent.

The finding by a team led by W. Keith Jones, PhD, of Loyola University Chicago Stritch School of Medicine, is published in the *American Journal of Physiology - Heart and Circulatory Physiology*.

"The study improves our understanding of the relationship between diet and health," Dr. Jones said. "Learning about how fat, in the short run, protects against heart attacks could help in the development of better therapies."

Dr. Jones emphasized the study is not a license to eat a lot of cheeseburgers and ice cream.

The study may provide new insight into the "obesity paradox": Obesity is a major risk factor for heart disease. But once a heart attack or heart failure does occur, moderately obese patients tend to live longer.

In the study, mice were given a high-fat diet (60 percent of calories from animal fat) before experiencing heart attacks. Mice that consumed a high-fat diet for either one day, one week or two weeks before the heart attack experienced about half as much heart damage as mice that ate a control diet. The benefit was greatest among mice that ate a high-fat diet for one week before the heart attack. But in mice that ate a high-fat diet for six weeks, the protective effect disappeared. Further research is needed to understand why this is so; the reason may be due to the bad effects of a persistent high-fat diet, Dr. Jones said.

Dr. Jones said that in the short-term, a high-fat diet protects the heart through a mechanism called autophagy, which works somewhat like a garbage truck. Proteins damaged by the heart attack are removed from heart cells as if they were garbage, thus increasing the chances the cells will survive. Acutely, a high-fat diet increases levels of a molecule in the blood that activates protective pathways in heart muscle. This increases the readiness of the "garbage trucks," which means that the cell becomes

resistant to damage when the heart attack occurs. As a result, more heart muscle survives. Dr. Jones's team is studying the nature of the blood-borne molecule and will report results of this research in a later publication.

The current study "opens a new perspective on the acute effects of a high-fat diet," first author Lauren Haar, PhD and colleagues wrote. "Future work will determine whether these effects are linked to the obesity paradox and whether studying the mechanism can identify therapeutic targets for cardioprotection."

The authors added that, given the increasing number of obese people in both developed and developing countries, understanding the relationship between fat intake and heart health is "critically important."

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