Medical Xpress

Pattern of heavy alcohol drinking may damage heart tissue

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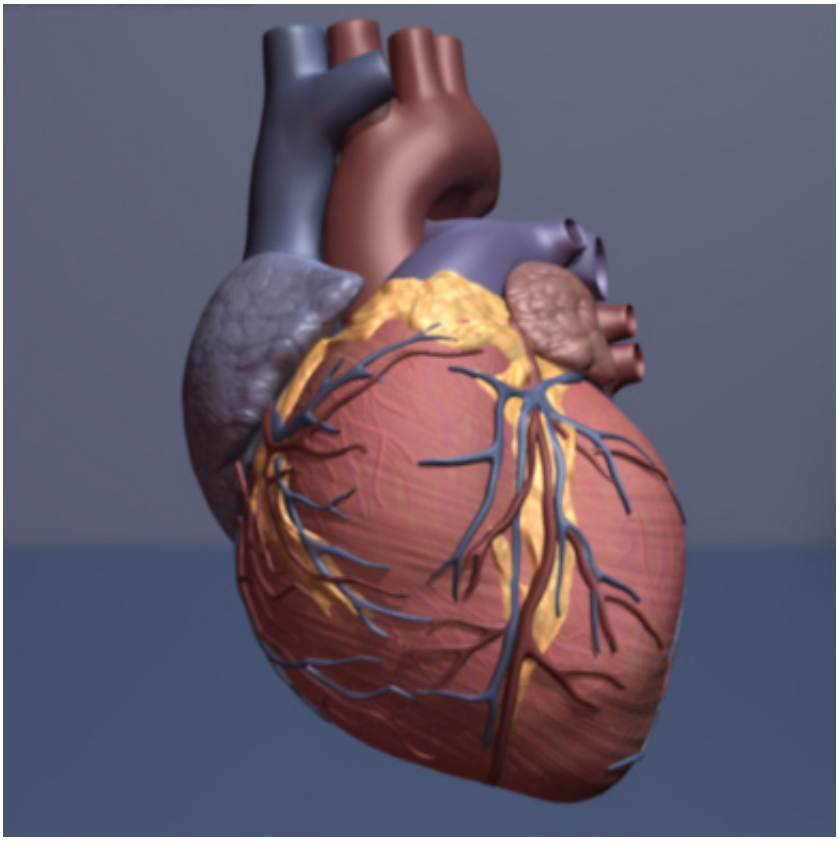

Human heart. Credit: copyright American Heart Association

A pattern of harmful alcohol consumption, or heavy drinking, increases level of blood biomarkers indicating heart tissue damage, according to new research published today in the *Journal of the American Heart Association*, the open access journal of the American Heart Association.

While previous studies have shown that heavy drinking can increase risks for alcoholic cardiomyopathy (leading to alcohol induced heart failure), high blood pressure, heart attack, arrhythmias, stroke and death, there is limited research on how alcohol consumption can have a such a negative effect on heart health.

For this study, researchers utilized certain signs to define the participants' drinking habits as heavy/harmful: having six or more drinks on one occasion; feeling hungover or drunk; needing a drink first thing in the morning; having experienced adverse consequences in their personal life because of drinking; having a family member or loved one who is concerned about their drinking. Any or all of these signs were indications of a level of drinking that is damaging to cardiovascular health.

"A person can have heart damage before symptoms occur, which we call subclinical heart disease. By measuring the level of certain molecules in the blood, we were able to find that heavy drinkers are much more likely to have subclinical heart damage than people who drink less heavily," said study author Olena Iakunchykova, M.S., a Ph.D. candidate in community medicine at the University in Tromsø, The Arctic University of Norway.

To determine the effects of varying levels of alcohol consumption on the heart, researchers examined blood samples from 2,525 adults, ages 35-69, from the year 2015 to 2018, from the Know Your Heart study. 2,479 of the participants were from the general population of Arkhangelsk, a city in Northwest Russia, while the other 278 participants were patients diagnosed with and being treated for alcoholism at the Arkhangelsk Regional Psychiatric Hospital.

The researchers categorized adults based on their self-reported alcohol consumption habits and included those who drank no alcohol, those who

consumed alcohol but didn't experience the signs of heavy/harmful drinking, and heavy drinkers who met the criteria for harmful drinking.

Blood samples included three important measures, or biomarkers, of heart health: 1) high sensitivity cardiac Troponin T, a measure of heart injury; 2) N-terminal pro-B-type natriuretic peptide, a marker of cardiac wall stretch; and 3) high sensitivity C-reactive protein, a measure of inflammation.

Researchers found:

- The hospital patient sample, which had the most extreme drinking pattern, had the highest levels of all three biomarkers, compared to non-problem drinkers in the general population;
- The hospital patients' biomarkers for heart injury was 10.3% higher; cardiac wall stretch was 46.7% higher; and inflammation 69.2% higher, compared to non-problem drinkers in the general population; and
- In the general population sample, the blood marker for cardiac wall stretch was 31.5% higher among drinkers with harmful drinking patterns compared to non-problem drinkers.

"Our results suggest that people who drink heavily are creating higher than normal levels of inflammation in their bodies that have been linked to a wide range of health conditions including cardiovascular disease," Iakunchykova said. "The study adds to what we already know about the health consequences of heavy alcohol consumption. We are now studying ultrasound images of the heart as it beats to help us identify the precise sorts of heart damage associated with heavy and harmful drinking."

Due to the research being confined to one city in Russia and the study population being almost exclusively of Eastern European or Russian

descent, the study results may not be generalizable to other races or ethnic populations. More research is needed to show how heavy alcohol use can impact heart health, and the role that inflammation in the body has in the development of heart disease.

More information: *Journal of the American Heart Association* (2019). DOI: 10.1161/JAHA.119.014491

Provided by American Heart Association

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