

Elevated cholesterol's link with canine cancer includes a better prognosis

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Dogs that develop bone cancer such as this Australian shepherd often have high cholesterol, and the ones that do have a better prognosis. Credit: Oregon State University

Usually thought of as a health detriment, elevated cholesterol may play a role in longer survival times for dogs with a common form of bone cancer.

In addition to their veterinary significance, the findings by Oregon State

University researchers advance the understanding of a type of malignant tumor, osteosarcoma, that's often diagnosed in humans as well, typically afflicting teenagers and young adults.

"This is one of the first steps into identifying cholesterol as a potential biomarker for canine osteosarcoma," said Haley Leeper, a veterinary oncology resident at the OSU College of Veterinary Medicine. "We don't have answers as to why high cholesterol is associated with this disease and with a better prognosis, but we're hoping to advance these findings in future research."

Leeper and collaborators at OSU and Iowa State University compared 64 dogs with osteosarcoma against two control groups: 30 dogs that had suffered traumatic bone fractures and 31 healthy dogs similar in age and weight to the animals with cancer.

Researchers found nearly half of the dogs with cancer—29 of the 64—had elevated levels of total serum cholesterol, a dramatically higher rate than occurred in either control population; just three of the 30 dogs with broken bones, and only two of the 31 healthy animals, showed [high cholesterol](#).

Of the dogs stricken with osteosarcoma, 35 had the cancer in a leg which was subsequently amputated, followed by chemotherapy, which is the standard-of-care treatment; the dogs with elevated total cholesterol had a median survival time of 455 days, more than 200 days greater than the median survival time for dogs with normal cholesterol.

"When people think of cholesterol they think of cheeseburgers and heart attacks," Leeper said. "However, cholesterol is involved with many key processes and structures in the body like cell membranes, bone health and the immune system."

Future studies that follow [dogs](#) long term and look at specific lipid content in the blood may shed light on the mechanisms behind [cholesterol](#)'s role in enhanced survival, Leeper said.

"There are a lot of things we plan on investigating," she said. "This is exciting and fascinating, partly due to the comparative medical aspects between human research and our research."

Collaborators included Craig Ruaux and Shay Bracha, colleagues of Leeper in the Department of Veterinary Clinical Sciences, and Austin Viall of the Department of Veterinary Pathology at the Iowa State University College of Veterinary Medicine.

Findings produced by this retrospective study were published in the *Journal of Small Animal Practice*.

More information: H. Leeper et al, Preliminary evaluation of serum total cholesterol concentrations in dogs with osteosarcoma, *Journal of Small Animal Practice* (2017). [DOI: 10.1111/jsap.12702](https://doi.org/10.1111/jsap.12702)

Provided by Oregon State University

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