What is this research about?

Bone marrow is the spongy tissue in the center of some bones in the body, where different parts of the blood are made. Bone marrow biopsies let veterinarians diagnose many diseases of the blood in animals, including cancers of the blood. In a bone marrow biopsy, a needle is used to “cut out” a tiny sample of the bone marrow from one of the major bones in the body, such as the pelvis or long bones in the leg. When looked at under a microscope, this sample can give information about the health of the bone marrow and the blood in general. Collecting bone marrow samples from small dogs can be a challenge because commonly available needle sizes were designed for use in humans. Even the smallest available needle can be difficult to use, and may increase the risk of bone fractures and other injuries to the animal. Sample quality may also be lower when using smaller needles. This research was performed to see if smaller needles designed for purposes other than bone marrow collection can be used to successfully collect bone marrow samples from small dogs.

What you need to know:

It is easier to take bone marrow tissue samples from small-breed dogs using smaller needles. With 15-gauge needles, sample quality is generally good when taken from the humerus (upper arm bone) of small dogs. However, the smaller 15-gauge needles may produce fewer stem cells for analysis of formation of blood cell components.

What did the researchers do?

Bone marrow samples were taken from 23 healthy Beagle (small-breed) dogs. Samples were taken using a smaller needle (15-gauge) from both the humerus (upper front leg bone) and pelvis, and using a larger needle (13-gauge) from just the humerus. Each biopsy was rated for how easy it was to do, the quality of the sample, and the amount of injury to the animal. Some samples were also wrapped in tissue paper after being taken in order to see the effect on sample quality.
What did the researchers find?
It was easier to take a bone marrow sample from the humerus using the smaller needle, than from either the humerus with the larger needle, or the pelvis with the smaller needle. The quality, however, was higher for the humerus bone marrow sample taken with the larger needle, than for the samples taken from the humerus or pelvis using the smaller needle. Samples taken with the smaller needle had fewer bone marrow cells available to examine. Paper-wrapping the biopsies did not improve sample quality.

How can you use this research?
Veterinarians can use this research to choose which bone marrow biopsy method is best for small - versus large-breed dogs.

Veterinary suppliers can use this research to develop bone marrow biopsy needles that are easier to use with small-breed dogs.

Keywords:
Dogs, canines, small breed dogs, bone marrow, blood diseases, biopsy, needle size, tissue sample, pathology

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