Man’s best friend, cancer’s worst enemy?

JANIS SIEGEL  JTNews Columnist

More and more, scientists are becoming intrigued by the possibility that dogs may be uniquely sensitive to the distinctive smell of a cancer cell and that they may someday play a crucial role in saving the lives of patients affected by cancer.

Recently, an Israeli researcher at Ben-Gurion University of the Negev decided to see if letting the hypersensitive olfactory skills of a trained dog might prove to be accurate enough to warrant further testing.

Dr. Uri Yoel, an instructor at BGU who also specializes in internal medicine at BGU’s Health Sciences department, didn’t even wait for funding to begin the first-phase test of these dogs in his lab.

Intrigued by several anecdotal accounts around the world during the last decade from dog owners who claimed that their pet continually barked at a particular site on their body no matter how much they tried to distract it, Yoel initiated an admittedly small study with only two dogs to test the phenomenon.

Yoel’s first experiment, having the dogs identify cancer cells in a Petri dish, showed great potential. He found that dogs can, in fact, smell, differentiate, and identify various cancers.

Once trained, Yoel’s canines achieved a 100 percent success rate, correctly distinguishing healthy, non-cancerous breast cancer cells from cancerous ones they found in separate cell culture plates.

“All smells leave a molecular footprint,” said Yoel, “but with something like breast cancer, it was hard to understand how this worked. The dogs were taught to smell only breast cancer cell cultures but were tested also for their ability to recognize lung cancer and melanoma cell cultures. They scored a perfect 100 percent in all cases.”

Over a decade of individual accounts of cancer detection by dogs showed that they correctly identified skin and lung cancer, which Yoel understood, because these smells are exhaled in a person’s breath or on their skin. But could a dog smell breast cancer, or other cancers inside the body, he wondered?

“Our research proves that dogs can smell cancer cells in vitro [outside the body] and that different types of cancer share the same smell print,” continued Yoel. “Again, we cannot know for sure if in vivo [inside the body], the dogs are reacting to the cancer itself or to the body’s reaction to it. I think that the cancer itself has a special smell print that the animals detect though it may be a combination of the two factors.”

Researchers are still not quite sure what the animals actually smell, but Yoel has observed that “different types of cancer share the same smell print.”

Since the first documented case of canine cancer detection about a decade ago, two women in the United Kingdom have claimed that their pets alerted them to lumps in their breasts by gently “pawing” at the area or otherwise signaling them. Both women were prompted to see their doctor and both women had malignant lumps.

Still, despite his results, it was not clear to Yoel if the dogs were correctly identifying the cells because of the human body’s own reaction to the cancer, which itself emits its own distinctive odor, due to either cell death or inflammation.

In addition, even if further study proved conclusively that dogs can reliably identify cancers in humans, the question remains as to how they might be used in the diagnostic setting when significant numbers of cases would need screening.

Encouraged by this first round of results, Yoel is going forward with a second phase of research with the cancer-sniffing canines, although he is looking for funding to further his work. He will need to hire two dog trainers, locate a facility to conduct the research, recruit hundreds of smokers with early-stage lung disease along with more than 100 dogs, according to BGU staff.

Training dogs to identify cancer cells is a relatively easy process, say dog-training experts, because it comes naturally to them and their acute sense of smell can be adapted to most settings. Doctors only need to introduce the dog to a particular scent or cell, and they get a reward when they respond to it during training.

Once the dogs are trained to alert for lung cancer by identifying the scent of those study participants who have the disease, Yoel will test again to determine whether they can pick out the subjects on their own.

“Even before we start training the dogs, we must see if they are suitable for this type of work,” said Yoel. “We need to see the dogs’ qualities as puppies and to trace their development. All this takes time — and modest resources.”

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