Research of Canine Osteosarcoma & IBD Advance Treatment Options

While there is no cure for canine osteosarcoma or inflammatory bowel disease (IBD), researchers are focusing on promising new treatments. Recent advancements in treating osteosarcoma may spare limbs and extend life for dogs affected by this painful cancer. Likewise, genetic discovery of polymorphisms causing IBD in German Shepherd Dogs may lead to new treatments. Here are snapshots of the research.

Killing Cancer Cells
Osteosarcoma is a fast-spreading, painful cancer that affects about 9 percent of giant breeds and 1 percent of large breeds. Owners and veterinarians work together to provide the best treatment possible using surgery, chemotherapy, radiation therapy and medications for palliative care. Usually, amputation of the affected limb followed by chemotherapy is recommended to increase survival, but owners of giant breeds often are reluctant to amputate, particularly a forelimb, because it can make walking difficult and may compromise quality of life.

While the conventional therapies for treating osteosarcoma aim to increase survival, research veterinarians are investigating promising new treatments. These include a recombinant bacteria vaccine and a powerful limb-sparing stereotactic radiosurgery that kills tumor cells and spares healthy tissue.

Osteosarcoma mostly occurs in dogs over the age of 6, long after they have been bred, but dogs as young as 1 or 2 years old can develop the cancer. Since osteosarcoma generally occurs in the leg bones, lameness and difficulty going up and down stairs are the most common signs that owners notice.

The cancer arises from mutated cells that stop bone-matrix remodeling and the production of bone cells. A definitive diagnosis is made from a bone biopsy, but characteristic lesions on radiographs are a strong indicator of osteosarcoma. Tumors are depicted in radiography as a starburst pattern of needle-like fragments of bone. In 90 to 95 percent of dogs, osteosarcomas have micrometastasized at the time of diagnosis. Micrometastasis is not clinically evident on radiographs but will eventually lead to large metastatic tumors usually in the lungs or other bones.

Treatment of osteosarcoma is challenging partly because the cancer is likely to metastasize, or spread, especially to the lungs. Metastasis in the lungs usually is the ultimate cause of death for dogs with bone cancer.

DOGS WHOSE BONES GROW RAPIDLY, SUCH AS LARGE AND GIANT BREEDS, OR DOGS THAT EXPERIENCE BONE TRAUMA AND DAMAGE THAT REQUIRES CELLULAR PROLIFERATION FOR REPAIR MAY BE AT HIGHER RISK FOR DEVELOPING OSTEOSARCOMA.

It is not known definitely whether osteosarcoma is an inherited condition in dogs. Nicola Mason, B.VetMed, PhD, DACVIM, the Pamela Cole Chair in Companion Animal Medicine at the University of Pennsylvania School of Veterinary Medicine, says, "Large and giant breeds may be predisposed to osteosarcoma because of genetic influences, but other factors may also be involved. Rapidly proliferating cells tend to be more susceptible to cancer-forming events, therefore dogs whose bones grow rapidly, such as large and giant breeds, or dogs that experience bone trauma and damage that requires cellular proliferation for repair may be at higher risk for developing osteosarcoma.

"Chronic inflammation is known to be associated with the development of other cancers, although it is unknown whether persistent bone inflammation predisposes to bone cancer. Most likely the cause of osteosarcoma, like other tumors, is multifactorial, involving both genetic and as-yet unknown environmental factors that together can create the perfect situation for bone cancer to develop."

Alternative approaches to treating osteosarcoma are being investigated. Sarah Chamney, DVM, DACVIM, DACVR, adjunct professor of radiation oncology at the University of Illinois College of Veterinary Medicine and staff radiation oncologist at Animal Specialty Center in Yonkers, N.Y., is part of a team that has pioneered a limb-sparing CyberKnife® radiosurgery technique for dogs where amputation is not possible or desired. Combined with chemotherapy, this radiosurgery, also known as stereotactic surgery, has a survival time that is similar to the standard of care with amputation and chemotherapy for good candidates. Unfortunately, not all dogs are good candidates. The viability of radiosurgery is best assessed by a CT (computed tomography) scan. The benefit of radiosurgery is that it saves the limb.

"With this procedure, a radiation oncologist uses a high-tech, image-guided and computerized robotic control system to deliver radiation with submillimeter accuracy," Chamney explains. "The CyberKnife radiation beams are sculpted to conform tightly to complex masses and deliver multiple radiation beams from many points outside the dog's body to the targeted tumor. The beams kill tumor cells yet spare healthy tissue. When the beams converge on the tumor mass, they deliver high-energy, pinpointed radiation with astounding power."

Compared to conventional radiation therapy, the precision of CyberKnife radiosurgery allows higher doses of radiation to be delivered to the tumor while minimizing damage to healthy tissue. One to three treatments are the same as 15 to 20 treatments of conventional radiation. The benefits include fewer hospital visits, fewer anesthetic episodes and reduced stress. Treatment is based on how much bone destruction has occurred as seen on a CT scan.

Meanwhile, at the University of Pennsylvania, Mason is testing a recombinant Listeria monocytogenes tumor vaccine. "Our project focuses on finding and killing the cancer cells that amputation and chemotherapy overlook," she says. "This method uses
Osteosarcoma & IBD Treatments continued from page 1

We also have identified antibodies specific for E. coli flagellin in dogs with IBD that are not present in unaffected dogs. This could lead to the development of a noninvasive diagnostic test for IBD.

While diarrhea and vomiting are the most common signs of IBD, the disorder also may cause anorexia or loss of appetite, weight loss, and blood or mucous in the stool. With loss of appetite, a dog becomes lethargic and loses condition and coat. Signs are persistent, and by the time a veterinarian examines a dog with IBD, overall health condition may be poor.

After a tentative diagnosis of IBD is determined, the gold standard approach to treatment is a food trial with an elimination diet containing a novel or hydrolyzed protein.

"The clinician faced with a potential case of IBD usually performs an extensive workup to exclude extra gastrointestinal causes as well as treatable disorders, such as pancreatic diseases, chronic parasitic or bacterial infections, and tumors," Allenspach says.

An accurate diagnosis may require an endoscopic biopsy of the GI tract. A veterinarian looks for lesions caused by lymphoplasma cellular inflammation in the mucous layer of the GI tract. These can be seen in about half of cases.

"The intestinal lining is composed of cells with proteins on the surface," says Allenspach. "Some of the proteins are receptors that recognize microbes. If that protein is not functioning properly, it will tell the immune system to develop inflammation against the normal bacteria in the intestines, causing the diarrhea and vomiting that are characteristic of the disease."

After a tentative diagnosis of IBD is determined, the gold standard approach to treatment is a food trial with an elimination diet containing a novel or hydrolyzed protein. This is based on theories that IBD is caused by an allergic reaction or hypersensitivity to dietary antigens. If a food trial does not reduce signs of IBD, antibiotic treatment is tried for several weeks, followed by immunosuppressant and anti-inflammatory treatments.

Lymphocytic plasmacytic IBD is the most common. It is due to an excess of two kinds of white blood cells, lymphocytes and plasma cells. Lymphocytes are responsible for much of the body’s immune protection, and plasma cells are a mature type of lymphocyte.

This type sometimes responds well to a four- to five-week course of antibiotics, such as metronidazole or tylosin. "These antibiotics probably are effective because they change the gut microflora," Allenspach explains. If antibiotics fail, the next step is anti-inflammatories, such as steroids, and immunosuppressants, which help eliminate chronic inflammation.

"Steroids can have significant side effects," says Allenspach, who is researching alternative medications. Cyclosporine, a drug used in humans to prevent organ transplant rejection, has shown excellent results without the side effects associated with steroid use, excessive thirst, urination and gastrointestinal ulcers, she says.

The second most common form of IBD, eosinophilic gastritis or enteritis, refers to the type of inflammation found in biopsies of the GI tract. This type of IBD is more severe. Biopsies show a high number of white blood cells called eosinophils that are often linked to allergic responses and parasitic infestations.

As breeders try to understand whether they should breed dogs with IBD, veterinary experts also grapple with the question. "It is too early to say that dogs with the mutation should be excluded from the breeding pool," Allenspach says. "It is probable that many dogs carry the mutation, but not all of them will get IBD. It is unlikely that one mutation is the single cause of the disease. There are environmental factors and probably other genetic factors that we haven’t found yet."

In most breeds, the cause of IBD is likely not strictly genetic or environmental, Allenspach says. Affected dogs within a breed probably share one or more genetic mutations, but the presence of the mutation alone does not mean the dog will develop IBD.

"If the environmental triggers were known, they could be avoided so possibly a dog carrying the mutation would never develop the disease," says Allenspach. "This is an area needing to be studied. At this point, we really don’t know."

Meanwhile, Allenspach advises breeders not to link every dog or every breed in the same category. "My belief is that there are different triggers in different breeds and thus different responses to treatment among the breeds as well as among different dogs," she says.

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Want to Reach the Editor?

Have comments about Purina Pro Club Update? Send them to us at: Purina Pro Club Update, c/o Editor, Nestlé Purina PetCare, 27 Checkerboard Square, St. Louis, MO 63164 or via e-mail at today@breeder@purina.com.
Purina ONE beyOnd brand dog food, the super-premium natural food plus vitamins and minerals introduced in 2011, now includes Weight Circles on the packaging. Starting in January 2013, Purina Pro Club will no longer accept UPC codes for Purina Point credit. 

Purina ONE beyOnd has a value of 11 points per pound, the same as other Purina ONE products. The Purina ONE beyOnd portfolio includes: Chicken & Whole Oat Meal Recipe, with real white meat chicken as the No. 1 ingredient and accented with carrots, tomatoes and apples, and Lamb & Whole Barley Recipe, with real lamb as the No. 1 ingredient and accented with blueberries, sweet potatoes and spinach. Both have a 26 percent protein to 17 percent fat ratio and are made without corn or wheat, added fillers or artificial preservatives. They offer complete and balanced nutrition for adult dogs.

Whole Oat Meal Recipe, with real white meat chicken as the No. 1 ingredient and accented with carrots, tomatoes and apples, and Lamb & Whole Barley Recipe, with real lamb as the No. 1 ingredient and accented with blueberries, sweet potatoes and spinach. Both have a 26 percent protein to 17 percent fat ratio and are made without corn or wheat, added fillers or artificial preservatives. They offer complete and balanced nutrition for adult dogs.

Purina ONE beyOnd dog food comes in 3.5, 15 and 26 pound package sizes. Purina ONE beyOnd is sold at pet specialty, grocery and mass retail stores. For information, visit www.purinaonebeyond.com. To talk to a pet adviser, call 1-866-PURINA (1-866-787-4621) from 7 a.m. to 7 p.m. Central time Monday through Friday.

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Pro Club Dog Food Checks Change to Match New Packaging Sizes

One of the benefits of being a member of Purina Pro Club is receiving dog food checks to offset the costs of Purina brand dog food. The $7 dog food checks now can be used toward the purchase of any 14-pound or larger bag of Purina brand dog food. New packaging sizes for Purina brand dog foods prompted the change.

Purina Points accrue when members submit Weight Circles, the colored circles on packages of Purina brand dog food. Weight Circle submissions are processed as Purina Points that can be redeemed for items from the Pro Club Rewards Brochure, online at www.purinaproclub.com, or for Purina dog food checks. Members should submit a minimum of 250 pounds worth of Weight Circles in one submission.

Pro Club members may order any quantity of checks in multiples of 10 checks, using their Purina Points. A set of 10 Purina brand dog food checks can be ordered for 7,000 Purina Points. A limit of one check can be used per bag. Members should allow three to five weeks for processing and delivery of checks.

How to Reach Purina Pro Club

To view your Purina Point balance, Pro Club members should visit www.purinaproclub.com or call 1-877-PRO-PROCLUB (1-877-776-2582) between 7 a.m. and 5 p.m. Central time Monday through Friday.

Purina dog food checks expire in one year and cannot be reissued. Members should protect dog food checks like cash. Purina is not responsible for replacement in the event of loss, theft or destruction after issuance.

When submitting Weight Circles, Pro Club recommends that you mail them by certified first-class mail or other traceable delivery method. This helps to ensure proof of delivery in the event Pro Club does not receive your Weight Circles. Pro Club is not responsible for Weight Circles not in its possession.

Reminders from Pro Club

Pro Club members should be aware of the following:

- Purina Pro Club is not a program for institutional organizations, such as rescue groups, humane societies or animal shelters.
- Any retail sale or purchase — including Internet transactions — of Purina and Pro Club materials is a violation of program terms and conditions. This includes, but is not limited to, the selling or buying of Purrier Starter Kits and weight circles.
- Pro Club is not responsible for fraudulent weight circles. Submitting fraudulent weight circles is a violation of the Pro Club program terms and conditions.
- Purina reserves the right to terminate membership or remove or disqualify earnings for any violation of account or program terms.

11th Annual National Dog Show Will Be Broadcast on Thanksgiving Day

The National Dog Show Presented by Purina, hosted by the Kennel Club of Philadelphia, will be broadcast on NBC from noon to 2 p.m. Central time on Thanksgiving, Nov. 22, following the “Macys Thanksgiving Day Parade.”

In its 11th year, The National Dog Show, which features Group and Best in Show judging, has become an American Thanksgiving Day tradition with about 20 million people tuning in. Co-hosts John O’Hurley, of “Seinfeld” and “Dancing with the Stars” fame, and David Frei, of the Westminster Kennel Club and an expert analyst, have provided commentary since the program began in 2002.

Heled at the Greater Philadelphia Expo Center at Oaks, The National Dog Show is filmed during the Saturday, Nov. 17 Kennel Club of Philadelphia Dog Show. Judging Best in Show is Vicki L. Abbott of McKinney, Texas. One of only five benched dog shows held in this country, the Kennel Club of Philadelphia and its predecessor clubs have presented dog shows since 1879. Today, the show draws more than 4,000 entries on Saturday and Sunday and more than 100,000 spectators.

Purina-Sponsored Dog Shows* | November 2012 to January 2013

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* This table lists some, but not all, upcoming Purina-sponsored dog shows.
Westminster Best in Show Dogs Remembered for their Achievements, Ambassador Roles

The recent passing of three Westminster Kennel Club Best in Show winners has left a void in the hearts of their owners and dog enthusiasts around the world. “J.R.,” “Stump” and “Rufus” will be remembered for the records they set but also for how they endeared all who knew them.

Owner-handler Scott Sommer of Houston lost his beloved house dogs, J.R. and Stump, over six days in September. J.R. (CH Special Times Just Right), the Bichon Frise who won the Garden in 2001, died Sept. 20 at 15 years of age. On Sept. 26, Stump (CH Clussexx Three D Grinchy Glee), the Sussex Spaniel who at age 10 became the oldest Westminster winner in 2009, passed away at 13 years of age.

After retiring as show dogs, J.R. and Stump had a daily ritual of taking a 10-minute ride with Sommer to the boarding/show kennel where they lived when they were being campaigned. Stump would get out of the car, walk into the kennel and take his place in the first run — the same that was his when being shown. J.R. liked to sit on a grooming table, where he would bark hello to all who entered.

The top-winning Bichon in breed history, J.R. won the Garden as a 3-year-old. Sommer continued to show the Bichon at select shows, and J.R. captured his 101st show at the first AKC National Championship. Best known for his bouncy, energetic temperament, J.R. also had a calm, empathetic side that came out when Scott took him to visit patients at children’s hospitals.

Stump, the 2004 Sporting Group winner at the Garden, came out of retirement to win Westminster, his 51st Best in Show and a first for the rare English breed. Though Stump was entered for Westminster, it was not until the Wednesday before that Sommer decided to bring him due to concerns that he was older and would have to fly in the cargo section because he was too large to meet the size requirement to fit under the seat. On the return trip from New York, Stump flew first class with Sommer.

Barbara and Tom Bishop of Holmdel, N.J., lost their beloved Rufus (CH Rocky Top’s Sundance Kid), the 2006 Westminster winner, Aug. 9 at 12 years of age. The first Colored Bull Terrier to win the Garden, Rufus accumulated 35 Bests in Show, including “The National Dog Show Presented by Purina” and the Morris and Essex Kennel Club Dog Show. A dynamic show dog and the most successful Colored Bull Terrier of all time, Rufus went on to become a therapy dog and breed ambassador.

Preceding the passing of these Westminster champions, “James” (CH Felicity’s Diamond Jim), the English Springer Spaniel who won the Garden in 2007, died in May 2011 at 11 years old. Owned by Teresa and Allen Patton of Fairfax Station, Va., and handled by Kellie Fitzgerald of Bear, Del., James later visited children at cancer centers and Ronald McDonald houses with Teresa Patton. He became the only canine celebrity to be recognized by the Alzheimer’s Association as a Champion for Alzheimer Awareness.

J.R., Stump, Rufus and James, along with “Uno,” the Beagle and “Sadie,” the Scottish Terrier, helped christen the Purina Event Center at Purina Farms in Gray Summit, Mo., in August 2010. Along with their owners and handlers, these Westminster Best in Show winners walked the red carpet and were the first dogs to enter the facility. Their names are engraved on brick pavers lining the Walk of Champions going into the building.

Purina joins the owners of these special dogs in commemorating their lives. Their accomplishments and their shining personalities will be remembered for many years to come.

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