THE DOCTOR Is In

BY T.J. DUNN JR., DVM

Arthritis care from medicine to nutrition

'Shep' was on his way home after surgery for a skin tumor. He was a determined old dog — determined that his arthritic joints would not keep him from walking right beside his kindly owner. Watching Shep slowly and carefully make his way across the parking lot on bowed and unsteady legs was a touching sight because his owner, too, was limping and slowed due to the ravages of arthritis. They were quite a pair. Their bond of loyalty was no match, though, for the aches and pains of their aged and degenerating joints.

That scene occurred 25 years ago, at a time when we had limited options for treating arthritis. Research and product developments since then have made great strides in the control and treatment of this debilitating condition.

MARY BLOOMFIELD FOX TERRIER

By keeping their weight under control, we can allow arthritic dogs to live comfortable lives aided by early medicinal and neutraceutical supplemental care.

One example of how arthritis develops is seen in dogs that tear their ACL (anterior cruciate ligament) in a knee. Joint instability sets off an infiltration of inflammatory cells and chemicals that invade the synovial fluid. Fibrin and calcium deposits build up, and scarred supporting tissues limit motion. Permanently worn cartilage overlaying and cushioning the bones leads to chronic pain. If breakdown of joint tissues progresses far enough, no amount of anti-arthritis medication, physical therapy, pain medication, or supplements will remedy the situation. However, the vast majority of dogs that suffer from non-specific degenerative arthritis will display a gradual symptomatology; they'll let you know by their body language that their parts aren't working like they used to. In that case, you just may have time to intervene.

"Arthritis medication" is generally of two major types: nutritional or medicinal. Nutraceuticals are food or naturally occurring food supplements thought to have a beneficial effect on health. They do not require a prescription and are readily available. Examples are omega fatty acids, glucosamine, chondroitin, antioxidants, and MSM (methylsulfonylmethane). A diet composed of high-quality protein and fat, plus appropriate amounts of nutraceuticals, can significantly improve the quality of life for many dogs with early-developing arthritis.

The medicinal class of arthritis treatment includes prescription medications derived from cortisone, and a second type of medication called NSAIDs (nonsteroidal anti-inflammatory drugs). NSAIDs include both prescription and non-prescription products, including aspirin, ibuprofen, etodolac, ketoprofen, meloxicam and carprofen. In the dog, commonly prescribed corticosteroids are prednisone, dexamethasone, triamcinolone and methylprednisolone. Please note that every one of these anti-inflammatory medications could produce serious, adverse effects and should be used only under veterinary supervision.

Corticosteroids and what they do. The adrenal glands secrete a glucocorticoid hormone called cortisol. Through a series of biochemical transformations, cortisol and its derivatives suppress production of inflammatory chemicals called prostaglandins and eicosanoids at the local cellular level. Corticosteroid drugs also affect blood pressure, immunity, mineral balance, scar tissue formation, and cell function. Corticosteroids can be miracle drugs when used appropriately. Due to some unfavorable side effects, long-term use in dogs with arthritis is reserved for special situations.

NSAIDs and what they do. All NSAIDs work by blocking certain prostaglandins, which are hormone-like substances that modulate pain, inflammation, fever, and muscle soreness. However, not all NSAIDs are alike. NSAIDs such as aspirin and ibuprofen suppress inflammation and pain by affecting the activity of two kinds of oxygen-containing molecules called cyclooxygenase (COX). (You probably have heard about COX-1 and COX-2 inhibitors relating to human anti-arthritis drugs.) COX-1 is the enzyme

responsible for proper platelet function, regulation of blood circulation through the kidneys, and integrity of the mucosal lining of the stomach. COX-2 is responsible for triggering chemicals that mediate inflammation.

NSAIDs inhibit both COX-1 and COX-2 biochemical pathways, but inflammation, fever and pain are best controlled by suppression of only COX-2. Serious side effects, such as gastrointestinal bleeding, stomach ulcers, and kidney failure, can be expected if COX-1 chemical reactions are blocked. Different strengths and dosage protocols may be tailored for each patient. Fortunately, specific compounds that block just COX-2, leaving COX-1 to perform its essential jobs, are now becoming available.

How nutraceuticals work. A wide variety of nutraceuticals in an assortment of combinations and strengths are available for dogs. Certain minerals, vitamins, antioxidants, and plant extracts have been purported to assist in alleviating inflammation. How these work and at what strengths they should be administered remains under investigation. Keep in mind that any product might work wonders for one dog, while doing nothing for another.

Glucosamine. A naturally occurring compound composed of a sugar and an amino acid, glucosamine is involved with the production of joint lubricants and maintaining the resilience of cartilage. It's vital to the growth and maintenance of healthy joint tissues, and if present in the diet in sufficient quantity, it can aid in the repair of damaged joint structures.

Chondroitin sulfate. Research on chondroitin sulfate suggests it may be beneficial in preventing stress injuries to joints as well as aiding in the repair of damaged connective tissue. It helps reduce pain and protects cartilage from degeneration. In combination with glucosamine, it purportedly improves each substance's beneficial effects. Chondroitin production in the dog's body decreases with age, so supplementation may be especially helpful for older dogs.

MSM. Methylsulfonylmethane provides sulfur compounds that some people believe may inhibit pain. (Sulfur is actually present in many foods containing protein.) MSM supplements purportedly aid in the relief of inflammation, can dilate blood vessels, and increase blood flow to inflamed tissues.

HA. Hyaluronic acid is a glycosaminoglycan similar to glucosamine, and has anti-inflammatory and anti-edema (i.e., skin-swelling properties). As arthritis progresses, HA content decreases in cartilage, which harms this tissue. Little research has been done on orally administered HA, but it has been used as an intra-articular injection in selected patients.

Omega fatty acids. Omega-3 and omega-6 fatty acids are the precursors of potent hormone-like substances called eicosanoids that, among many other things, modulate inflammation and pain receptors. Every cell membrane has lipids (fats) in its structure; the presence of dietary omega-3 fatty acid provides an opportunity for high-quality fatty acids to replace poor quality lipids in the cell membrane. The derivatives of omega-3 fatty acid have significantly beneficial anti-inflammatory activity, and greatly assist in the wellness of all cell membranes throughout the dog's body.

Take heed early in the development of arthritis, and you will have an opportunity to delay the onset of advancing degenerative joint disease. One of the best things you can do for your dog — well before you notice any signs of arthritis — is to keep his weight under control. Never underestimate the importance of a high-quality diet! If arthritis is suspected, make an appointment with your veterinarian for a thorough physical exam and body-weight evaluation. Radiographs may be taken, and causes of the dog's joint discomfort explored (to rule out such conditions as Lyme disease, immune-mediated polyarthritis, torn ligaments, or tumors). Once you have a baseline status report, your veterinarian can then suggest appropriate courses of action.

T. J. Dunn Jr., DVM, practices in Wisconsin and manages ThePetCenter.com. *Send questions to Dr. Dunn at* thedoctorisin@bowtieinc.com.

Movement Maven

New columnist Sue LeMieux profiles Rachel Page Elliott, the authority on dog structure and movement.

Page 24