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Elbow Dysplasia **Beardie Bulletin, Summer 1999, 29/2, p. 5-6** **By Teri Fleming, BCCA Health Chair**

Elbow dysplasia is a degenerative bone disease. Unlike hip dysplasia, it isn't a single mechanism, but actually at least three different disorders that may be the cause of the joint destruction. Different breeds may be more predisposed to one form than another, but it is primarily a disease of medium and large breeds of dog. First becoming an issue for Rottweilers and Bernese owners in the early 70's, it is now known to affect many breeds. As more is known about the disease and more animals are x-rayed, it is increasingly clear that it is a major cause of front end lameness in many breeds. According to OFA, fewer than 75 Beardies have had films submitted for evaluation of elbow health, so little is known about the actual incidence in our breed, but there have been reports of it. When you consider that 75-80% of the dog's weight is normally borne by the front legs and Beardies are being called upon in increasing numbers to participate in performance events, it seems wise to take a closer look at the disease.

To understand the processes, it helps to realize that the dog's elbow is somewhat like ours. The elbow is basically a hinge type joint of the upper arm and forearm with supporting ligaments. The humerus is the upper arm and has two projections (condyles; one on the inner surface and one on the outer) which cradle the main projection from the lower arm, which is made up of two bones, the radius and the ulna. The radius of the lower arm supports most of the dog's weight and the projection seen on the dog as the point of the elbow, the "olecranon process", is part of it. The ulna and its condyles stabilize and the movement of the elbow, and in normal development part of it fuses to the radius to provide that stability. As growth progresses in a pup, a number of things can go wrong resulting in dysplasia in the elbow. Growth plates can fail to close or can fill in improperly. Differing rates of growth between radius and ulna can prevent fusion of the bones creating uneven wear on bone and cartilage. Recent studies at UC Davis suggest that joint laxity caused by improper fit may play a role as well. Three main disorders can result in and create the degenerative dysplasia and can occur alone or in combination with each other

UAP – Ununited Anconeal Process. The anconeal process is a projection of the olecranon with growth plates normally fused at 16 weeks. In dogs with UAP this fails to happen, allowing increased movement between it and the ulna



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causing damage to the growth plate and eventual complete separation. The separated portion may continue to float causing pain and swelling or may attach to another portion of the irritated elbow. In either case, when untreated it results in a severe arthritic process with lots of new abnormal bone formation causing increasing swelling, joint stiffness and eventual alterations in gait which can include the east-west stance, swinging the legs in an arc, or gaiting with elbows out. The treatment of UAP should be geared toward early detection, before secondary arthritic changes are severe, and best results come from surgical removal of the fragment.

FCP- Fragmented Coronoid Process. In this elbow disorder, the ulnar growth exceeds the growth of the radius putting stress on the coronoid process and by 4- 5 months the process will fracture off the shaft of the ulna. Unlike the process in UAP, this fragment usually maintains its position due to its soft tissue attachments but may become somewhat unattached. In either case it causes damage to the surrounding area and its own cartilage surface. Because of its tendency to stay relatively in place, the problem fragment does not usually cause the larger osteophytes (new abnormal bone growth) as seen in UAP and symptoms may first be seen later. Taken together with the possibility of it being hidden by the olecranon on film, FCP is not as easily detected on x-ray. Additionally it does not usually create the same amount of obvious swelling and gait problems and frequently affects both forelegs so there isn't any discrepancy in shortening of reach. All these factors make FCP more difficult to diagnose than UAP, but left untreated there will be the same arthritic changes over time. Again, removal of any fragments of cartilage or osteophytes is the best course of treatment to minimize damage.

OCD-OSTEOCHONDRITIS DISSECANS OF THE HUMERAL CONDYLE.

Diagnosis of these disorders is made by x-ray and while there are accepted positions that best demonstrate the problems, it is important to remember that, as stated, some of these first involve damage to the cartilage which does not readily show on x-ray. Therefore any lameness in the front end should be re-examined at a later date if first films prove negative. In breeds that are heavily affected, routine screening has shown that some dogs are stoic enough to have no reported symptoms in spite of x-ray evidence of the disease.



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It should be pointed out that while many agree that early surgery will bring the best long-term results, the degenerative process will continue. While early intervention will slow the process by limiting the degree and speed of damage, if there is already considerable bony changes noted on x-ray, surgery may not be of much value. For this reason, there remains some debate as to the advisability of surgery. There can, of course, be a medical course of therapy aimed at relief of pain and inflammation that can bring about some relief and an improved quality of life. This is often the recommended course for more advanced cases.

The cause of these disorders, as with hip dysplasia, is believed to be a polygenic disorder with environment playing a part in its expression. High calorie and high calcium diets can influence growth rates and the process of calcification of the growth plates and therefore affect the expression of the genes involved.

How much each play a role in the disease remains a matter of debate, but in recent studies, screening and selective breeding of unaffected parents has successfully been shown to reduce the incidence of elbow disease in breeds who are heavily affected (Berners, Rottweilers, and Newfoundlands).