7 Summary

Elbow dysplasia in Golden Retriever – A comparative study of two computer-aided measurement methods

Growth and developmental disorders of the elbow joint are frequent causes of lameness of the thoracic limb of the dog. Golden Retriever is one of the mainly affected breeds. Two different computer-aided methods of measurement will be compared in this study. The aim is to find out whether one of these measurement methods is more suitable to distinguish affected from unaffected joints and to recognize a possible predisposition for elbow dysplasia (ED). X-Rays of the elbow joints in the medio-lateral view of 216 Golden Retriever are examined with measurement methods from *VIEHMANN (1998)* and *MUES (2001)*. In this study male dogs are more affected from elbow dysplasia than female dogs. Seven parameters were measured with the procedure of *VIEHMANN (1998)*. Three of them describe the shape of the trochlear notch of the ulna. Dogs with a more pronounced elbow dysplasia show an elliptic shape of the trochlear notch. A parameter for the size of the area of the humeral condyle which is included in the trochlear notch was measured. No correlation was found between a progressive cranial displacement of the humeral condyle and a higher degree of arthrotic alteration. However the surface of the humeral condyle located in the trochlear notch diminishes when the dogs gets older. The height of the step between radius and ulna was measured with two different parameters. There was no relation between the step and an increasing degree of arthrotic changes. The radius of the humeral condyle was measured by both methods and is considered to be a measure of the size of the elbow joint. The radius of male dogs is larger than for female dogs. The degree of arthrotic alteration of the joint is not influenced by the size of the radius of the humeral condyle. *MUES (2001)* method led to similar findings. Four angles, arranged around the centre of the elbow joint were measured with *MUES (2001)* method. The size of two of these angles (angle PA and RA) increase when the arthrotic alteration of the joint gets more pronounced. Both are defined by points of the elbow joint, which are affected early by the formation of osteophytes, the anconeal process and the cranial point of the radius. These angles seems to be suitable to characterize secondary arthrotic changes in the joint. But they don´t describe changes in the morphology of the elbow. This would be necessary to detect a predisposition for elbow dysplasia before arthrotic alterations become visible. The angle UL of this measurement method includes the shape of the trochlear notch. The size of these angle has no clear connection with the degree of elbow dysplasia. By describing the shape of the trochlear notch with three parameters of the method of *VIEHMANN (1998)* it is possible to detect a predisposition for elbow dysplasia early. An elliptic trochlear notch of ulna is considered to benefit the development of elbow dysplasia.