

## Elbow Dysplasia in German Shepherd in Turkey

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**Abstract:** Clinical and radiographic diagnostic methods and incidence of elbow dysplasia in German shepherds has been discussed in this study. About 284 elbow joints of 142 German shepherd dogs (different age and sex) consisted the material of the study. After radiological examinations types and the degrees of the dysplasia were identified. Out of 142 dogs, 29 dogs (20.42%) were found to be dysplased. The results of the present study show that elbow dysplasia is a significant problem in German shepherd dogs in Turkey.

**Key words:** Elbow dysplasia, radiographic diagnosis, German shepered dogs, UAP, OCD, Turkey

### INTRODUCTION

Elbow Dysplasia (ED) is a condition involving developmental abnormalities of the elbow joint and resulting in the arthritic changes of the joint (Kirberger and Fourie, 1998). This condition results from cartilage incongruities as well as from various anomalies in bone development (Blenau, 1993). The condition is believed to have a strong genetic component (Guthrie and Pidduck, 1990; Padgett *et al.*, 1995; Beuing *et al.*, 2000).

The term elbow dysplasia includes the following primary lesions: Ununited Anconeal Process (UAP), Fragmented Coronoid Process (FCP), osteochondrosis or Osteochondritis Dissecans (OCD) of the medial aspects of the humeral condyle and Joint Incongruity (JI) of the elbow joint (Narojek, 1988; Kirberger and Fourie, 1998; Remy *et al.*, 2004). Elbow Arthrosis (EA) caused by FCP, UAP, OCD and JI is the manifestation of inherited elbow dysplasia. Each of those anomalies can exist separately but usually two or even three of them are found coexisting in one dog (Narojek *et al.*, 2008).

Limited reports are found concerning ED problems in the Turkish literature (Yardimci *et al.*, 2006, 2010). In many countries, their respected breeding councils consider elbow dysplasia in several breeds as severe problems as requiring radiological testing before a dog is qualified for breeding. But there have been no data describing this problem in Turkish dog population. The aim of this study was to document the incidence of elbow dysplasia in German shepherds in Turkey.

### MATERIALS AND METHODS

One hundred and fourty two German shepherd dogs (with different age and sex) with suspected of elbow dysplasia consisted the material of the study. Clinically,

Table 1: The success rate of different radiographic positions for the diagnosis of FCP (Hazewinkel *et al.*, 1995)

| Radiographic positions                 | Success rate (%) |
|--|------------------|
| Antero-Posterior (AP)                  | 57.4             |
| Antero-Posterior-Medial-Oblique (APMO) | 15.8             |
| Medio-Lateral-flexion (ML/flexion)     | 82.4             |
| Medio-Lateral-extension (ML/extension) | 93.5             |
| ML/extension + AP                      | 96.9             |
| ML/flexion + ML/extension              | 97.9             |
| ML/flexion + ML/extension+AP           | 97.9             |
| ML/extension + APMO                    | 100.0            |
| ML/flexion + ML/extension + AP + APMO  | 100.0            |

Table 2: Grading of elbow dysplasia (offa.org)

| Grade I  | Grade II   | Grade III   |
|--|--|---|
| Minimal bone change along anconeal process of ulna (<3 mm) | Additional bone proliferation along anconeal process (3-5 mm) and subchondral bone changes (trochlear notch sclerosis) | Well developed degenerative joint disease with bone proliferationalong anconeal process being >5 mm |

the dogs were examined while they standing, walking and running. In addition, the legs examined by palpation.

After clinical evaluations, radiograms obtained different positions (Hazewinkel *et al.*, 1995; Barut *et al.*, 2004) (Table 1). Radiographic examination was conducted under general anaesthesia to achieve full muscle relaxation.

Anaesthesia was induced in animals by intramuscular administration of a combination of Rompun 1.5 mL/10 kg (Bayer, xylazine hydrochloride, 23.32 mg mL<sup>-1</sup>) and Ketalar 15 mg kg<sup>-1</sup> (Parke-Davis, ketamine hydrochlorur, 50 mg mL<sup>-1</sup>). In diagnosing ED, radiographic evaluations used in dogs were employed. As well as radiographical changes in elbow joint, the degree of dysplasia was determined acoording to the offa.org (Table 2).

## RESULTS AND DISCUSSION

Despite ED has known, it has not been controlled yet. Early diagnose is very important to control the ED. In order to that various diagnostic methods have been improved (Narojek, 1988; Hazewinkel *et al.*, 1995; Komsta *et al.*, 2008; Yardimci *et al.*, 2010).

A total of 284 elbow joints of 142 German shepherd dogs were examined in this study. Dogs were of different ages (range 4-12 months) and sexes (87 males, 55 females). Beuing *et al.* (2000) reported that many large breed dogs are affected by ED. British studies in Labrador and Golden Retrievers established relatively high heritabilities for Osteochondrosis Dissecans (OCD) and Fragmented Coronoid Process (FCP) (Guthrie and Pidduck, 1990; Narojek *et al.*, 2008). The patient usually is a dog of large breed especially a young German shepherd, 5-6 months old with an obscure type of intermittent but persistent forelimb lameness (Whittick, 1974).

In this study, the incidence of elbow dysplasia documented in German shepherds. Out of 29 dogs, 11 (37.93%) were aged between 4-8 months, 18 (62.07%) 8-12 months old. This results agree with those reported by Sjostrom (1998) and Yardimci *et al.* (2010).

In a dysplastic elbow, the medial coronoid process and the edge of the ulnar surface lie above the level of the adjoining radius creating a step between the radius and ulna and causing incongruity of the joint. This incongruity alone is often a source of pain and lameness (Whittick, 1974). In this study, affected dogs had various degree lameness and abnormal gait. This dogs held their legs out from their body while walking and often stood with the feet rotated outward. Exercises made the lameness worse. In dogs with bilateral elbow dysplasia, sometimes the lameness was observed intermittent. This results agree with as reported by Whittick (1974).

It was also confirmed that the intensity of clinical symptoms depends on the primary diseases occurring in a dog and the animal's susceptibility to pain (Beuing *et al.*, 2000). In the present study, it was observed that various degree of pain in all affected dogs. The dog generally needs to be heavily sedated or anesthetized to obtain good x-rays, since the limb needs to be manipulated and positioned in ways that are often painful (Hornof *et al.*, 2000; Haudiquet *et al.*, 2002). In this study, radiograms were obtained from anesthetized dogs. In diagnosing ED, radiographic evaluations used in dogs are employed. As well as radiographical changes in the elbow joint, the degree of dysplasia was determined as described by Hazewinkel *et al.* (1995). In this study, the degree of dysplasia was determined according to the offa.org. This method was found effective to diagnosis of ED. Komsta *et al.* (2008) reported that ED scores were higher

Table 3: Degree of elbow dysplasia

| No. of evaluations | Percentage |            |         |          |           |
|--------------------|------------|------------|---------|----------|-----------|
|                    | Normal     | Dysplastic | Grade I | Grade II | Grade III |
| 142                | 79.58      | 20.42      | 14.92   | 4.21     | 1.29      |

in males than in females. In this study, 29 of 142 dogs were dysplased and 19 (65.52%) of the dysplased dogs were male, 10 (34.48%) were female. A total of 40 elbow joints of 29 dogs were dysplased. Degree of dysplasia in the dogs are shown in Table 3. Bilateral and unilateral dysplasia were observed in 11 (37.93) and 18 (62.07) dogs, respectively. Results of this study agree with as reported by Denny (1980).

## CONCLUSION

The results show the extent to which the ED scheme in the Turkey is being followed for German shepherds. Because elbow dysplasia score is likely to be correlated positively with the probability of occurrence and the severity of ED.

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