ANALYSIS OF CHOSEN FACTORS INFLUENCING THE LATE RECOGNITION OF FRAGMENTATION OF THE MEDIAL CORONOID PROCESS IN DOGS

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Abstract

The aim of this study was to estimate some factors that were contributing to the development and detection of fragmentation of the medial coronoid process (FMCP). The study was performed on a group of 51 large- and giant-breed dogs with recognized FMCP. The analysis of the information gathered from dogs’ owners showed that, in general, they had problems of detecting any irregularities in their dogs’ health and behaviour showing that the disease is developing. Symptoms of FMCP, when unaccompanied by other osteopathies were very weak. This was the cause of not reporting to the veterinarian at the beginning period of this disease. It can be predicted that if a clear lameness appears in a young dog and it is easy to be noticed by its owner, the simultaneous development of a few clinical forms of osteochondrosis and other diseases of the osteogenesis period can be suspected. Most of the dogs (66.7%) suffered from FMCP and from one of other diseases: panosteitis, osteochondrosis dissecans, ununited anconeal process, and hypertrophic osteodystrophy. The appearance of a few skeletal system conditions, every one of which in the same individual manifested itself with a various degree of pain intensification could make it difficult for veterinarians to locate exactly the illness process.

Key words: dog, fragmentation of medial coronoid process, clinical diagnosis.

Fragmentation of the medial coronoid process (FMCP) is one of many clinical forms of osteochondrosis. It develops in elbow joint in the period of osteogenesis in large-breed and giant-breed dogs. Reasons for FMCP localization and its development are still unknown (1). The most often it is thought to be conditioned by temporal, asynchronous forearm growth, as well as considerable susceptibility to physical and metabolic injuries of the cartilage, of which the medial coronoid process is formed (3, 15, 18, 19). In young giant- and large-breed dogs susceptibility to local disorders in endochondral ossification of the above mentioned cartilage can be observed. The unequally running process of ossification results in bone fractures appearing in its area. The joint fluid penetrates through the created clefts on the surface of the cartilage, which having reached the spongy layer, damages the bone trabeculas. The unevenesses formed on the joint surfaces result in osteoarthrosis development. The inflammation process can develop in their neighbourhood, which can be manifested by pain and lameness (3, 4, 6, 15, 17, 19).

Apart from FMCP in large- and giant-breed dogs there appear other forms of osteochondrosis, such as osteochondrosis dissecans (OCD) and ununited anconeal process (UAP). The above mentioned clinical forms of osteochondrosis, if they are developing in the elbow joint, they are collectively named elbow dysplasia.

The primary symptoms of FMCP are manifested by lameness of a small extent, which can be noted in 4-5-month-old animals. In most of dogs the condition develops in a way hard to be recognized and as a rule, the guided diagnostic examination is undertaken too late. Then, the radiograms reveal the presence of advanced osteoarthrosis of elbow joints (4, 9, 14, 16, 17). The late detection of the illness makes much more difficult to treat it in an actual way.

Many studies of osteochondrosis in dogs proved that the illness afflicted the considerable part of some races population (for example rottweilers) (5). For some years a great amount of efforts have been put to limit its prevalence as well as to enable its possibly earliest detection. The purpose of this study is the estimation of the factors influencing the relatively late FMCP detection in large- and giant-breed dogs.

Material and Methods

The study included 51 large- and giant-breed dogs at the age of 4.5 months to 7 years, which were radiographically diagnosed for FMCP. The dogs were selected from the group which were examined in our Radiology and Ultrasonography Laboratory.
The International Elbow Working Group (14) recommends to take and estimate the radiographs of elbow joints. Other than FMCP diseases of the immature skeleton appearing in radiogram analysis are to be taken into consideration.

In the examined dogs, the appearing of particular forms of osteochondrosis and other osseous system diseases was also estimated. The following features were taken into consideration: age of the dog when the owner noticed the first FMCP symptoms, kind of the symptoms, period of time between the symptoms perception and presentation of the dog to veterinarian, and the correlation between the severity of clinical symptoms and intensity of radiographic changes.

Results and Discussion

The performed radiographic examinations revealed that in most of the examined patients (31 cases - 60.7%) both elbow joints were afflicted by the disease. The appearing of more than one form of osteochondrosis (FMCP and OCD, FMCP and UAP or FMCP together with OCD and UAP) was observed in 15 dogs (29.4%).

In addition, there were shown other concomitant diseases of the osseous system. Among 51 dogs, in 17 (33.3%) FMCP was the only radiologically diagnosed cause of lameness. In the other 34 animals (66.7%), the presence of other osteopathies was detected. (Fig. 1).

FMCP was most often accompanied by panosteitis (61.8%), next by OCD (26.5%) and then by UAP (17.7%) and hypertrophic osteodystrophy (17.7%). All above mentioned disease entities are characterized by lameness with a various degree of intensification. The literature does not deliver profound information on simultaneous appearing of different diseases in the same individual, which are characteristic for the period of skeletal maturation. Apart from Hedhammer (7), only Koper (10) and Milton (13) mentioned the diseases accompanied by osteochondrosis. The last author mentioned hip dysplasia, ununited anconeal process and retained cartilage core. Carpenter (2) reported also the concomitant elbow dysplasia and panostitis. Marcellin-Little et al. (12) in their studies of incomplete ossification of humeral bone condyle in spaniels diagnosed FMCP in 93% of the dogs.

The analysis of the information gathered from dogs’ owners (Table 1) showed that if in one or both elbow joints only FMCP developed, then the owners noticed lameness in dogs which were about 15-month-old. However, if simultaneously with FMCP UAP was developed, or both OCD and UAP, the symptoms of pains were noticed much earlier (at the 5th month of life). Under these circumstances, the proceeding damage of one or more joints with degenerative changes also in the area of tissues included in the inflammation process, the symptoms were likely to be more extensive. The intensity of lameness was also much greater than when the disease process was caused only by FMCP. It can be predicted that if a clear lameness appears in a young dog and it is easy to be noticed by its owner, then a few concomitant clinical forms of osteochondrosis, of which elbow dysplasia consists, can be suspected.

Fig. 1. Osteopathies detected with FMCP in the examined dogs.

N – number of dogs; CHD - hip dysplasia; HOD - hypertrophic osteodystrophy; OCD - osteochondrosis dissecans; PE - panostitis, P - post-traumatic changes; UAP - ununited anconeal process; GO - generalized osteoporosis
Table 1

Correlation between concomitance of various clinical forms of osteochondrosis and FMCP and age of a dog in which the first symptoms of the disease were noticed by its owner

<table>
<thead>
<tr>
<th>Form of osteochondrosis</th>
<th>Age of a dog (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FMCP</td>
<td>15.0</td>
</tr>
<tr>
<td>FMCP + OCD</td>
<td>7.6</td>
</tr>
<tr>
<td>FMCP + UAP</td>
<td>5.0</td>
</tr>
<tr>
<td>FMCP + OCD + UAP</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Denotations as in Fig. 1.

Table 2

Information contained in radiographic examination referrals in dogs with proved presence of FMCP

<table>
<thead>
<tr>
<th>Suggested place of radiographical examination</th>
<th>Prefatory diagnosis (purpose of examination)</th>
<th>Number of referrals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elbow joint</td>
<td>elbow dysplasia</td>
<td>36</td>
</tr>
<tr>
<td>Shoulder joint</td>
<td>osteochondrosis dissecans of shoulder joint</td>
<td>5</td>
</tr>
<tr>
<td>Forearm bones</td>
<td>panosteitis</td>
<td>4</td>
</tr>
<tr>
<td>Carpal joint</td>
<td>forearm bone fracture</td>
<td>1</td>
</tr>
<tr>
<td>Forelimb</td>
<td>lack</td>
<td>3</td>
</tr>
<tr>
<td>Elbow and hip joints</td>
<td>ruling out hip and elbow dysplasia</td>
<td>1</td>
</tr>
</tbody>
</table>

Denotations as in Fig. 1.

Moreover, the collected data showed a great time discrepancy between lameness noticing and presentation to the veterinarian. The mean time of it, in the examined animals, amounted to about 11 months and was by 3.5 months longer than that shown by Read (19). The dogs’ owners were usually not able to determine exactly when they had noticed symptoms of pain and estimate the course of the condition. Among 51 dogs’ owners 15 (29.4%) estimated the lameness as a periodic one, 19 (37.2%) as continuous one, and 5 of them (9.8%) spoke about a recurring lameness at the beginning of the condition and then the permanent one. Almost the same number of dogs’ owners (11 - 21.6 %) observed the intensification of the condition after exercise as after rest (10 – 19.6%). Only one dog owner noticed a stiff walk after taking a rest and another one an unwillingness to walk. Two of them saw a wrong limb position. The cause of difficulty in noticing lameness may by due to the fact that FMCP afflicts both elbow joints in most animals (69.7%). In that case the only noticed symptom can be shortened stiff walk (1). When a small injury on one of limbs can intensify lameness, then it could be noticed by the owner (19). Uncertainty in exact assessment of the condition symptoms is comparable with other authors’ reports (1, 4, 17, 19), especially in dog races showing a high tolerance for pain (4, 6, 11). That is why in some individuals FMCP is characterized by a symptomless course. It can be proved by reports on accidental disclosure of the condition in old dogs (8) and also by the results of my own practice according to which FMCP was accidently diagnosed in dogs after injury and in a dog directed to radiographic examination of hip and elbow joints in order to rule out the possibilities of hip and elbow dysplasia.

The troubles may appear with precise assessment of gait incorrectness by the dog’s owner, in consequence the late decision to present the dog to the veterinarian and to agree for the radiographic examination of the cause of a dog limb pain. My own examinations show that during the first 7 d since lameness appeared, such a decision was made by 6 owners (11.8%).

Diversed little specific clinical symptoms of FMCP, which impede the right assessment of an elbow joint, have found their reflections in information referred to radiographic referrals (Table 2).

Among 51 dogs with radiographically shown fragmentation of the medial coronoid process, 36 referrals (70.6%) suggested the necessity of one or both elbow joints examination. In this number, 18 referrals (50%) applied to only one joint examination while radiographic examination revealed disease changes in both of the elbow joints. It should be pointed that in these changes the degree of their development was never the same in both joints and only in the case of advanced degenerative changes there was the distinct correlation between the clinical examination and the result of the radiographic assessment.

Appearance of a few skeletal system diseases, every one of which in the same individual manifested itself with a various degree of pain intensification, could make it difficult for veterinarians to locate exactly the illness process (almost 30%). That is why a part of them connected the noticed lameness only with conditions...
located out of elbow joint, such as osteochondrosis dissecans of the shoulder joint or panosteitis. Sometimes they only asked for general examination of one of the forelimbs.

Reasuming, symptoms of FMCP, when unaccompanied by other osteopathies, are very weak. This is the cause of not reporting to the veterinarian at the beginning period of this disease. In addition, in 67% cases FMCP appears with other disorders of the skeletal maturation period, which makes even more difficult to assess clinical state of the patient. There are the reasons why during the diagnosis of lameness causes in a young large-breed or giant-breed dog, a high possibility of simultaneous development of a few osteogenesis period diseases should be considered.

References