Canine OCD

It's Not What You Think

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Osteochondritis disicans (OCD) is canine disorder seen most frequently in young large- and giant-breed dogs. And no, it does not mean obsessive-compulsive disorder when it comes to our four-legged companions. It is a joint disorder involving a cartilage flap in the shoulder, stifle, elbow or tarsus.

In order to understand the pathology of OCD one must have a basic understanding of anatomy and how bones grow from puppyhood to adulthood. Bones are sub-divided into 5 regions (fig. 1). The physis is also known as the growth plate, and in puppies is made up of cartilage cells. These cells are responsible for growth of the diaphyseal portion of the bone (fig 2). A similar event takes place along the very end of the bone in the epiphysis. Here, along the very end of the bone, another growth plate exists and is responsible for the production of hyaline cartilage (joint cartilage) and for the growth of epiphysis (fig. 3).

The underlying pathology of OCD is associated with failure of the normal bone and joint growth process. The cartilage cells in the end of the epiphysis grow out of control and this cellular region becomes thickened. The thickened cartilage detaches from the underlying epiphysis and tears into the joint. Joint fluid seeps under the cartilage flap causing further undermining. The result is a large cartilage flap with a corresponding defect in the bone. The exact cause of OCD is not completely understood, but it is generally believed to be a genetic problem.

Clinical signs of OCD depend on the joint affected and severity of the lesion. OCD usually affects large and giant breeds between 6 and 12 months of age. The most common joints are shoulder, stifle (knee), elbow and tarsus (ankle). Dogs with shoulder OCD are often extremely lame and have pain on shoulder extension. Stifle, elbow and tarsal OCD also result in severe lameness as well as moderate to severe joint swelling. OCD may be bilateral (affecting both the right and left sides).

Tentative diagnosis of OCD is based on orthopedic examination and radiographs (X-rays) (fig. 4). The definitive diagnosis is based on arthroscopy (fig. 5).

Treatment involves removal of the cartilage flap. In all cases, arthroscopic removal is considered the state of the art and least invasive method. Following flap removal, micro-fracturing the remaining defect is recommended. Micro-fracturing involves making small holes in the remaining defect in an attempt to reach a local blood supply, which aids in healing. In the shoulder joint, the above treatment is usually all that is needed. In the elbow, stifle and tarsus flap removal and corrective osteotomy are often used in conjunction with one another. Regenerative stem-cell therapy may also play an adjunctive role.

Fig. 2 Cartilage cells in the physis multiply, grow, die and are replaced with bone cells and ultimately bone. This results in diaphyseal bone growth and elongation.

Fig. 3 Another type of growth plate is responsible for joint cartilage and epiphyseal growth.

Fig. 5 Cartilage flap underlying bone.

Prognosis ranges from excellent to poor depending on the location of the lesion. In general, dogs with shoulder OCD have an excellent prognosis following arthroscopic flap removal and micro-fracturing. Dogs with stifle, elbow and tarsal OCD have a less-favorable prognosis, although corrective osteotomy, regenerative stem-cell therapy and replacing the defect with a bone/cartilage or synthetic core plug offer promise. All of these new procedures are being performed at CCO.

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