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IMAGING IN SKELETAL DISORDERS IN SMALL BREED DOGS AND CATS

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Imaging modalities used in the investigation of skeletal disorders in small breed dogs and cats include radiography, ultrasound, scintigraphy, computed tomography and magnetic resonance imaging (MRI). The most common modality used is radiography as this is readily available, inexpensive and well taught in veterinary curriculum. Fortunately, references of normal skeletal radiography anatomy are abundant. Ultrasound is less commonly used than radiography, because it is more operator dependent. Ultrasound is best for imaging the soft tissue structure such as muscles, tendons and ligaments. It can also be used to image the intraarticular structures. Bone scintigraphy is a very sensitive technique that can detect any abnormal bone pathology especially when there is increased bone production. This modality is normally used to detect bone metastasis and help in localization of lameness when the physical examination is equivocal. Computed tomography is best to examine complex bony structures such as pelvic and skull fractures when radiography cannot provide any adequate information for the planning of fracture repair. MRI has been used to image joints and muscles. However, image resolution is reduced in small patients like small breed dogs and cats, limiting its usefulness in some cases. Radiography is the most important among these imaging modalities, and will be the focus of this lecture.

As in larger companion animals, diagnosing bone fractures and evaluating fracture healing are important in small breed dogs and cats. Most fractures are trauma related and commonly involve the forelimbs in dogs and hindlimbs in cats. In cats, proximal femoral physeal fractures can be divided into traumatic and atraumatic origin. A common predisposing cause of atraumatic fracture is physeal dysplasia associated with early neutering in male cats.

Degenerative joint diseases are common in both small breed dogs and cats. However, due to their lighter weight and the non-athletic function, these changes normally are considered incidental findings and do not result in clinical signs.

Skeletal disorders such as hypertrophic osteopathy, hip dysplasia and patellar luxation are rarely reported in cats. Osteochondrodysplasia is a unique condition in Scottish fold cats. Feline bone neoplasias are rare. Only few cases of synovial osteochondroma, osteosarcoma and metastatic digits neoplasia from the primary lungs neoplasia have been reported.

Patellar luxation and avascular necrosis of the femoral head are the two most common appendicular skeletal...
disorders in small breed dogs. Incomplete ossification of the humeral condyle is reported mainly in cocker spaniels. This condition may result in humeral condylar fracture. Other skeletal disorders which are commonly seen in large breed dogs such as panosteitis and ununited anconeal process are rarely reported in small breed dogs.

Commonly reported axial skeletal disorders in small breed dogs include atlantoaxial instability and craniomandibular osteopathy. Craniomandibular osteopathy is a non-neoplastic, proliferative bone disease that affects the skull and is more prevalent in the West Highland White Terrier.