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Feline hind limb lameness - what if it's not a fracture or an abscess?

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Osteosarcoma

The incidence of bone tumours in cats is reported to be 3.1 per 100,000 cases. The most common bone tumour is osteosarcoma (OSA), accounting for approximately 70% of all primary tumours (Bitteto et al 1987). Older cats are usually affected (mean age 10 years) and the tumour appears to have a predilection for the metaphysis of the long bones of the hind limb and the pelvis. OSA of the appendicular skeleton of the cat behaves in a much less aggressive fashion than its canine counterpart. The metastatic rate is relatively low, 1 in 19 cases in one study (Quigley & Leedale 1983); and because wide margins can be achieved by amputation the prognosis for long survival times is good. OSA of the axial skeleton carries a less favourable prognosis because the site of the tumour often precludes complete surgical removal. Radiographic features of feline OSA are variable, lesions of the long bones are predominantly metaphyseal and lytic.

The Hip

Hip dysplasia

Hip dysplasia in cats may be detected as an incidental finding when the pelvis or abdomen is radiographed for other reasons. The lower incidence, or detection rate, is related to the smaller size and varied genetic background of cats. In addition different clinical signs are exhibited. Pure-bred cats may be predisposed. In one study the incidence was reported to be 6.6% (Keller et al 1999). Radiographic signs in cats included more acetabular remodelling with minimal femoral neck changes. A study performed at the University of Pennsylvania confirmed that cats have high hip joint laxity and there is a relationship between DJD and laxity in the hip joint of cats (Langenbach et al 1998).

Slipped capital femoral epiphysis (metaphyseal osteopathy)

This condition is seen mainly in young male neutered cats, aged 2 years or less. Affected cats present with unilateral hind limb lameness often of insidious onset. Radiographs show a slipped femoral epiphysis, there may be 'apple coring' of the femoral neck (Queen et al 1998). This is a hypertensive response associated with attempts to repair the fracture. Biopsies of the affected femoral neck showed evidence of fracture healing. In some cases the fracture has healed but a malunion is present. One review of 26 adult cats with spontaneous femoral capital physeal fractures suggested that they were most likely to be heavier, neutered males with delayed physeal closure (McNicholas et al 2002). Treatment is femoral head and neck excision. The other femoral head may slip or fracture at a later date.

Hip luxation (dislocation)

The hip is the most commonly dislocated joint in the cat. The luxation usually occurs in a dorsocranial direction, mainly due to the pull of the gluteal muscles. Lameness may vary from non-weight bearing to mild with some external rotation of the foot. Manipulation, palpation and comparison of leg length can aid in diagnosis, however fractures in this area can have similar clinical findings. Definitive diagnosis is by radiography - lateral and ventro-dorsal extended. It is best to radiograph the hip joint prior to attempting closed reduction, if fracture fragments are present or the cat has hip dysplasia / DJD or another traumatic injury then closed reduction is unlikely to be successful.

Treatment options include closed reduction, conservative, transarticular pin, ilio-femoral suture and femoral head and neck excision amongst others. The transarticular pin is a useful method of hip stabilisation in the cat, and the commonest technique we employ (Sissener et al 2009). 1.6mm K wires are used, and left in temporarily for 2-4 weeks, the duration is mainly dependent on the presence of other injuries. The prognosis is good for maintenance of reduction, except in bilateral cases where reluxation of one hip is likely. Conservative treatment is an option in cats where cost is an implication, however stiffness is likely.

Myositis ossificans

A generalised form affects skeletal muscle and connective tissue. Young cats with this disease present with weakness, stiffness, decreased limb movement and muscle pain. Calcified masses can be palpated in muscles. Radiographs reveal extensive soft tissue mineralisation. There is no effective treatment for the generalised form...
and prognosis is poor (Norris et al 1980). The localised form has a better prognosis and at CUVVS we have seen three cats with progressive myositis ossificans affecting the semitendinosus / biceps femoris musculature.

THE STIFLE

Cranial cruciate ligament disease

Cats do suffer cranial cruciate ligament disease (Harasen 2005). There are two main forms, traumatic and degenerative. In the traumatic form there is usually damage to other structures such as the collateral ligaments and menisci (stifle derangement). Cats with degenerative cranial cruciate ligament ruptures (or the occasional isolated traumatic rupture) will have hind-limb lameness, stifle joint swelling and the cranial drawer test will be positive. Radiographs of affected stifles will show compression of the infra patella fat pad associated with a joint effusion. Dystrophic mineralisation can be seen especially in older animals (Reinke & Mughannam 1994, Whiting & Pool 1985). In Reinke & Mughannam's (1994) paper they report on six spayed female cats, five of which had a cruciate rupture. The lameness resolved after cruciate surgery and calcification resection. Mineralisation may also be present in the normal stifle.

Treatment of cranial cruciate ligament rupture in cats is either conservative or surgical. In one study where 18 cats were treated conservatively they took an average of five weeks to regain normal gait (Schrader & Scavelli 1987). Surgery may have the advantage of offering a quicker return to function. Generally extracapsular stabilisation techniques are suitable and the prognosis is good. Tibial plateau levelling procedures have been performed in some cats. It is important to check affected cats carefully for concurrent disease. In one paper three cats with cranial cruciate ligament rupture were all operated with an extracapsular technique, all died within 2 weeks of surgery with cardiomyopathy. The author advised ECG and thoracic radiographs prior to surgery or that the cats be treated conservatively (Janssens et al 1991). The author has also seen two cats with cranial cruciate ligament rupture that had concurrent hepatopathy.

The deranged stifle

Disruption of the stifle after trauma in the cat is not uncommon. Often both cruciate ligaments are disrupted, together with one, or both, collaterals, and meniscal detachment. The joint is highly unstable and conservative treatment is not appropriate, it is therefore important to differentiate these more severe injuries from an isolated cranial cruciate ligament injury. The options for management are either to individually repair the affected collateral, reattach the meniscus, and the cranial (and caudal cruciate) ligament or to effectively reduce the dislocation and place a transarticular pin. In seven cats where a transarticular pin was used for deranged stifles the results were excellent in 4, fair in 2, and poor in one (Welches & Scavelli 1990). Complications included pin loosening & bending. These were possibly as a result of inadequate external coaptation. Bruce (1999) reported on the use of TESF after reconstruction of individual ligaments in four cats. There were serious complications with fractures occurring through ESF pin-holes when cats were not confined indoors, otherwise the method was successful in terms of stabilising the stifle.

Patella luxation

Patella luxation is not common in cats, when it occurs it is generally medial and can be uni or bilateral. Both traumatic and developmental (congenital) forms are seen. The condition has been reported in the Devon and Cornish Rex, Persian and Abyssinians as well as domestic short-haired breeds (Engvall 1990). Houlton and Mynard (1989) report on 8 cats with patella luxation, six of which had bilateral disease. Conservative treatment was unsuccessful but there was a ninety percent improvement with surgery. One patella fracture occurred 6 months post operatively.

Patella fracture

These are usually stress fractures in cats. They are generally seen in young cats between one and two years of age and in over half the cases they are bilateral with a median interfraction gap of 3 months. The fractures rarely heal and pin and tension band wire fixation should not be used as it results in further fracturing of the brittle bone. Circumferential wiring, tension band wiring (without a pin) or conservative treatment can all be used but which is the best treatment has not been fully determined. Chronic non-union fractures can be seen in older cats.

THE HOCK

Scottish Fold Osteochondrodysplasia

The Scottish fold breed of cat derived from a DSH crossed with a Scottish farm cat with folded ears. The folded ears are a sign of defective collagen / cartilage. Some cats have associated osseous deformity with ankylosis of the hindlimb, joints and tail. In one case report the cat had bilateral hind-limb lameness, asso-
Collateral ligament injuries

Traumatic hock injuries are common and usually associated with fractures (Roch et al 2009). Most commonly there is fracture of the lateral malleolus (fibula) alone or with a concurrent fracture of the medial malleolus, most rare is bilateral ligament rupture without fracture. When avulsion fractures are present these should be stabilised with pin and tension band wire and external coaptation or transarticular external skeletal fixation. Occasionally cats will present with hind limb lameness associated with closed collateral ligament injury, sometimes just the short collateral ligament may be ruptured. Repair is necessary with closed injuries - primary repair is often difficult and use of a prosthetic ligament is recommended, Anchorage of prosthetics is challenging in the cat given the small size.

Periosteal proliferative polyarthritis

PPP is a form of Immune-based arthritis reported by Pedersen (1980). It generally affects male cats and has a guarded prognosis for recovery. It mainly affects hocks and carpi. Radiographically there are erosive changes in the joints and entheseopathies. Possible viral association but unconfirmed.

REFERENCES

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