Orthopedics

Congenital genu recurvatum in a cat

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Introduction and Case report Studies:
Genu recurvatum is a rare pathologic condition and to the authors’ knowledge this is the first report of the congenital form of genu recurvatum in a canine or feline patient.

A four week old male Persian kitten was presented for evaluation of severe bilateral anatomic pelvic limb deformity. The owner reported that the kitten was bred as an accidental mating with the dam’s sire.

On clinical examination the patient was able to ambulate but with marked pelvic limb gait abnormalities. The kitten had both pelvic limbs abducted from the hip joint and was unable to flex either stifle or hock joints. The stifle joints were bilaterally hyperextended and the quadriceps mechanism was palpable as a tight band. Flexion of the stifle and hocks could not be achieved. Pelvic limb proprioception could not be accurately assessed due to the abnormal anatomy. Orthopaedic examination of the thoracic limbs and the remaining clinical examination were unremarkable.

Radiographs previously made by the referring veterinary surgeon showed increased femoral inclination and anteversion angles, hyperextension of the stifles with valgus deformity and hyperextension of the talocrural joints with an associated degree of varus deformity. The right stifle angle was measured at 222 degrees (figure 1). These clinical findings are consistent with genu recurvatum. Due to the multiple levels of orthopaedic abnormalities in this patient, the owner opted for euthanasia.

Discussion:
Genu recurvatum (GR) is a rare condition first described in the medical human literature by Chatelaine, in 1882(1). The disease affects 17 people per million newborns, is more prevalent in females compared to males (2.3:1) and is commonly accompanied by congenital or genetic malformations(2). It is defined as a pathological hyperextension of the knee greater than 30 degrees, associated with limited flexion(3). In the feline patient, the proper standing stifle joint angle is 120 to 125 degrees (4). As the angle measured on the lateral radiograph projection was 222 degrees, the difference to proper standing angle joint is clearly greater than 30 degrees and so consistent with genu recurvatum. The degree of recurvatum is not in itself correlated with prognosis(5), but rather this depends on the presence, or not, of dislocation of the knee(6).

Congenital genu recurvatum (CGR) in more than half of the cases is bilateral(7,8). Associated anomalies are very common, with a reported incidence rate of 60 to 100 per cent(7,9,10). The most frequent associated anomaly is congenital dislocation of the hip(9). This patient had increased femoral inclination as well as anteversion angles and coxofemoral subluxation was present. CGR can present three different forms, namely, congenital hyperextension, congenital hyperextension with anterior subluxation of the tibia on the femur and congenital hyperextension with anterior dislocation of the knee joint on the tibia(11). This patient showed hyperextension of the stifle joint but subluxation or complete luxation was not identified. CGR can be isolated, or associated with other
malformations (genetic entities), or as a consequence of abnormal presentation and oligohydramnios(12). Further testing in this patient was not performed and therefore the presence of associated genetic disease could not be identified. In human medicine, treatment depends on the severity of the dislocation and the age of the patient(11). Non-operative treatment is usually successful, if commenced at birth. Early manipulation, combined with splinting and casting is the mainstay of treatment in dislocation(9,13). Late presentation may require surgical release of the anterior structures of knee(14). When CGR is associated with dislocation of the knee, surgery is required which usually results in complete recovery of joint mobility(15).

Surgical management described in the human literature includes arthrodesis(8), lengthening of the quadriceps and femoral wedge osteotomy(16)or soft-tissue release, quadricepsplasty and osteotomy of the distal part of the femur, in order to obtain a stable and straight limb to permit ambulation(17). Physical therapy and splinting continues to be the foundation of managing patients with GR, and plays a vital role even in cases were surgical intervention is chosen. The existence of other genetic or non-genetic developmental anomalies concurrent with GR will determine the therapeutic strategy that is indicated and when such action should take place(2).

**Bibliography:**