Update the feline osteoclast resorptive lesions in cat

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Feline osteoclast resorptive lesions or Feline odontoclastic resorptive lesions (FORLs) are a group of conditions that affect the teeth of cats. These lesions are characterized by the resorption of dentin and enamel. The condition is more common in cats over the age of 5 years, and the incidence of the disease increases with age. There is no gender or breed predisposition, but Siamese and Persian cats are more likely to develop this condition.

Clinical Signs

FORLs typically begin at the cementoenamel junction, progressing to the gingival border. The lesions are usually covered by plaque, calculus, gingival hyperplasia, or granulation tissue. The resorption process affects the hard tissues of the tooth, including dentin and enamel. If the lesion is deep enough, it can extend into the pulp chamber, leading to pain and discomfort.

Radiographic Appearance

Radiographic images of FORLs show irregularities in the alveolar margin at the cementoenamel junction, lamina dura, root ankylosis, and root resorption. These images are crucial for diagnosis and treatment planning.

Pathogenesis and Etiology

Type I (Inflammatory Root Resorption; IRR) and Type II (Non-inflammatory Replacement Resorption) are the two main types of FORLs. Type I is caused by inflammatory factors, while Type II is due to unknown factors.

For Type I (IRR), the inflammatory process affects the periodontal space, where cytokines stimulate the activity of odontoclasts. The resorption process leads to the formation of alveolar abscesses and periodontal pocket formation.

For Type II (Non-inflammatory Replacement Resorption), the resorption process affects the hard tissues of the tooth, leading to root resorption and ankylosis.

In both types, the underlying cause of FORLs is not fully understood, but it is believed to be multifactorial, involving both genetic and environmental factors.
จากการศึกษาทางกล้องจุลทรรศน์ของ Gorrel และ Larsson (2002) ใบฟันแมวที่พบอาการทางคลินิกหรือความผิดจากภาพถ่ายรังสีของโรค FORLs และแมวที่มีฟันปกติพบว่าผลภาพของผลฟันหลังกลุ่มมีลักษณะ microscopic non-inflammation resorption ร่วมกับการสึกกร่อน ในแมวกลุ่มปกติจะพบการซ่อมแซมด้านของเคลือบรากฟัน ในขณะที่แมวกลุ่มที่พบโรคของโรคหรือมีความผิดปกติจากภาพถ่ายรังสี พบว่า microscopic resorption มีความรุนแรงมากกว่า และเกิดการเชื่อมกันส่วนของเนื้อฟันจนเกิดเป็น microscopic ankylosis ซึ่งผลการศึกษานี้สอดคล้องกับการศึกษาของ Reiter

การรักษา

จุดประสงค์ของการรักษาโรค FORLs เพื่อบรรเทาความเจ็บปวดที่เกิดขึ้น ป้องกันการดำเนินไปอาการทางคลินิกของโรค และรักษาให้ฟันกลับมาใช้งานได้ การถอนฟันที่พบอาการของโรคเป็นวิธีการมาตรฐาน (gold standard) ในการรักษาโรค FORLs มีการรักษาหลายวิธีที่พยายามรักษาฟันให้อยู่คงอยู่ เช่น การใช้วัสดุอุดฟันและใช้เทคนิคการอุดฟันต่างๆ แต่ผลของการรักษาที่ไม่ดีประสงค์แม่นยำกว่า 25 เปอร์เซนต์ ตามหลักของการเกิดโรคในเนื้อฟันจะมีการรักษาเฉพาะฟันที่สูญเสียไปในระยะแรกๆ ที่มีการตรวจพบ ทำเลือกแนวทางการรักษาโดยการอุดฟัน จำเป็นต้องอาศัยภาพถ่ายรังสีของฟันเพื่อวางแผนการรักษาเนื่องจากการตรวจทางคลินิกเพียงอย่างเดียวไม่สามารถบอกถึงขอบเขตของอาการได้ มีรายงานการรักษาโรคฟันกร่อนโดยการใช้ neodymium:yttrium aluminium garnet (Nd:YAG) laser (Anthony, 2001) ในฟันแมวที่มีอาการของโรคจำนวน 71 ฟันพบว่า 79 เปอร์เซนต์ ไม่พบการพัฒนาของโรคเพิ่มขึ้นภายในระยะเวลา 5 ปี การยิงเลเซอร์ฟันที่มีความจำเป็นที่ต้องที่ในแนวทางต่างจะร่วมกับการตรวจทางคลินิกเพียงอย่างเดียว Zinc-ascorbate ยูดฟันที่พบอาการของโรคเฉพาะ คงมีการรักษาขั้นตอนที่ต้องทำตามที่ระบุในเอกสารอ้างอิง

เอกสารอ้างอิง

Temporomandibular joint disease in dog and cat

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Introduction

The TMJ is a synovial joint in which the condylar process of mandible articulates with the mandibular fossa of temporal bone. The joints enclosed in the capsule, as thin a unique fibrocartilaginous disc, meniscus, lies between the hyaline cartilage covered articular surface. A articular disc separates the TMJ cavity into dorsal and ventral compartments, these 2 compartment do not communicate. The TMJ is responsible for the hinge movement for open and close the mouth in both species (flexion and extension), laterotrusive movement (translation) just in dog (cat’s morphology is more restrictive, prominent retroarticular process and articular eminence).

Clinical sign

Patient are frantic, painful, reluctance to chew, audible “click” with the jaw movement and profusely salivating. There has the sign as cannot open/close the mouth, swelling, malocclusion of teeth, decreased range of motion and/or enopththalmos/exophthalmos. The ear disease should be rule out.

Diagnosis

The best is establish the diagnosis and treatment plan early for optimal results. We can classified from the clinical sign as

1. Unable to open the mouth

   The disease that has these sign as TMJ ankylosis, fracture of zygomatic arch, osteoarthritis, inflame of masticatory muscle, tetanus, retrobulbar abscess or cyst, neoplasia.

   The mouth locked due to abnormal relationships of the zygomatic arch with the coronoid process of mandible. Typically the coronoid process can be palpated lateral to the jaw or entrapped near the ventral aspected of the zygomatic arch. These case fail with close reduction.

   1.1 TMJ ankylosis may develop. The jaw lock in a close position, limited range of motion, eating very difficult. Two types have been recognized; extra/intracapsular. The x-ray feature associated loss of a regular TMJ space and mandibular condyle has irregular new bone formation. The treatment consists of condylectomy with high re-ankylosis.

   1.2 Craniomandibular osteopathy. The young (3-7 months) West Highland White, Scottish Terrier are seen with unknown cause associated with development. Puppies present with swelling of jaw, lethargy and fever. X-ray has extensive, bilateral, irregular periosteal reaction of mandible that can extend to TMJ tympanic bullae and calvarium. The NSAIDs or corticosteroid is recommended, the sign may regress at about 1 year of age.

   1.3 Osteoarthritis. The osteophyte formation can be severe, its may surround the articular surfaces of temporal bone and mandibular condyle. The osteophytes were more detected at medial aspect rather than the lateral aspect of TMJ, whereas the dorsal and ventral compartment did not differ. Treatment is limited to medical therapy. The OA did not associate with sex or weight (differ from appendicular joint).
1.4 TMJ fracture. The most common TMJ disease in cat is TMJ fracture, especially on condylar process. In contrast, the dog’s fracture area were affected with similar of condylar process and temporal bone.

2. Unable to close the mouth

The relate sign as TMJ dysplasia with coronoid displacement, TMJ luxation, mandibular neurapaxia, fracture of zygomatic arch, atrophy of muscle of mastication and neoplasia.

The open lock associate with symphyseal laxity, type 2 and 3. The abnormal symphysis allow lateral outward positioning of the coronoid process then entrapment lateral to the zygomatic arch.

2.1 TMJ luxation would most commonly occur immediately after the mouth open very wide, as with yawning. The subluxation cause by trauma a dropped jaw, jaw maybe fasciculate or tremor. The cat has higher incidence due to decreased mandibular symphyseal movement and shorter jaw length. The rostro-dorsal luxation are usually occure more than caudolateral from protecting anatomy. (retroarticular process and strong lateral ligament)

2.2 In cat, open mouth lock may due to super-eruption. The alveolar osteitis, chronic periodontal disease cause the teeth projected into an abnormal position. The upper and lower teeth on the same side became entrapped. Tooth extraction resolved this open mouth jaw locking.

2.3 TMJ dysplasia or malformation. Dysplasia reported in Basset hounds, Dachshunds, Irish setters, extended period of intermittent open mouth. The mandible laterally shifted to the lateral and ventral aspect of zygomatic arch. The malformation of bony structure of TMJ and extend period of open mouth jaw locking. Xray: flat of mandibular condyle and fossa, hypoplastic retroarticular processs, wide irregular joint space, periarticular osteophyte.

Reference

Tip in familial exotic pet oral home care

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Introduction

Oral home care is an important component of a preventive medicine for all pet. Many health problems start in the oral cavity. Plaque, tartar, periodontal disease, and overgrowth or infected teeth serve as a source of inflammation and infection which can lead to the systemic disease. Different from dog and cat that have many methods about oral home care such as tooth brushing or oral rinsing with antiseptic solution. Ideally, familial exotic pet (small mammals, avian, reptile and fish) should receive the same diets as their free-ranging counterparts to maintain good oral health.

Rabbit oral care

Lagomorphs are distinguished from rodents in that they have 4 upper incisors teeth. Many oral problems in rabbits are related to husbandry or dietary problem, because they have teeth that grow continuously throughout their lives. If they develop dental disease, they may require routine dental trims to help keep them comfortable and allow normal eating habits. Dental exams should be performed at least every 3 months in this species. In rabbits, the ideal diet consists of various grasses, herbs and leaves; this is a similar for guinea pigs chinchillas, and degus.

Signs of dental disease in rabbit
- anorexia
- weight loss
- hypersalivation and slobbers
- naso-ocular discharge
- facial asymmetry
- selective eating
- exophthalmos

Rodent oral care

Guinea pigs, chinchillas and degus is the strict herbivores eating a highly abrasive diet have continually growing and eruption incisors and cheek teeth as also occurs in the rabbit. This dentition has been called elodont (aradicular hypsodont).

Hamsters, gïrêls, mice, rats and other small rodents (species eating less abrasive diets) have continuously growing and erupting incisors; however, their cheek teeth are brachyodont. They have a short crown and a well defined root. These brachyodont teeth do not grow continuously. The number of teeth vary between species of rodents. The diet is fundamental to dental and overall health for these animals. Continuous growing teeth remain functional as a result of the normal wear from chewing feeds. Every time a rodent stops eating, reduces feed intake or becomes anorexic, the teeth may overgrow. The result is a painful mouth and in some cases the inability to eat and secondary infections are difficult to treat. This becomes a life threatening problem very rapidly. Early presentation of rodents for a dental evaluation may be life saving.
Ferret oral care

This mammal is carnivore and should have a complete oral examination every year during their annual check up. Gingivitis, plaque and dental calculi can be managed by dental scaling and polishing under anesthesia. Any loose or infected teeth should be extracted. As with other exotic pets, ferret should receive the same diet as in the wild but normally the owner always feed with the commercial cat food. Tooth brushing can be practiced in this species.

Conclusion

Client communication and oral home care is the essential part of a preventive health care plan, the owner are the first important keys to recognize the problem. Dentistry on exotics animals tend to play a relatively small role in the practice. However, many people own exotic pets and they suffer from a number of oral and dental problems.

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