

A Short Review of Feline Orofacial Pain Syndrome

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Abstract

FOPS is identical to orofacial pain disorders in humans. The sensitization of trigeminal nerve endings as a result of an oral disease or tooth eruption is an important factor of the syndrome's appearance. Effects on the disease could be caused by external factors. This condition is common in the Burmese cat. Probably there is a genetic basis. Anti-epileptic typically are the first-line therapy. The purposes of treatment are to reduce the discomfort and the mutilation. It is essential to treat or avoid the elemental causes.

Keywords: *Feline Orofacial Pain Syndrome (FOPS); Oral Disease; Tooth Eruption; Anti-epileptic*

Introduction

In the early 1990s a condition which named as "FELINE orofacial pain syndrome" was identified. FOPS is a pain disorder of cats with behavioral signs of oral discomfort and tongue mutilation and it is characterized by face and tongue mutilation and other signs. Discomfort and mutilation are associated to any possible causes for the pain.

The disease is a neuropathic pain disorder similar to trigeminal neuralgia in humans. An important factor of the syndrome's appearance is the sensitization of trigeminal nerve endings as a result of an oral disease or tooth eruption. External factors could also have an effect on the disease.

This condition is common in the Burmese cat; probably there is a genetic basis for the syndrome, although the disease may be shown in any variety of feline populations (Siamese, Tonkinese, Burmilla and DSH). Cats of all ages could be affected. FOPS sometimes are resistant to traditional analgesics.

Pathogenesis

FOPS is similar to orofacial pain disorders in humans, comparable to trigeminal neuralgia. Trigeminal neuralgia is defined by severe pain in the distribution of the nerve. The pain is brought on by trigger factors. The most common pain is facial movement (e.g. chewing).

This condition is caused or initiated by a primary lesion, an injury or a dysfunction due to abnormal sensory processing in the peripheral nervous system or central nervous system. It is a combination of the false process of sensory trigeminal information within the brain and the endings of the trigeminal nerves. The trigeminal nerve transfers sensory information about the face and mouth, as pain or touch. There is no ostensible annoyance elsewhere in the trigeminal nerve distribution (nose or eyes).

Affected cats mostly have an underlying disorder processing sensory trigeminal information, as a result of the sensitization of trigeminal nerve endings by a dental disease is a neuropathic pain.

The pathophysiology of neuropathic pain is complex and incompletely understood. There is a hypothesis that Burmese cats tent to FOPS also have a dysfunction of central and/or ganglion processing of sensory trigeminal information.

Neuropathic pain generally is a result of surgery (especially amputation or fracture) when suitable analgesics have not been given or given to enough duration. Nerve compression and diabetes may conclude to neuropathic pain. Discomfort categorizes from spontaneous pain or paraesthesia or dysaesthesia or allodynia or hyperpathia.

Risk factors-clinical signs

The risk factors for disease are oral lesions (periodontal disease, mouth ulcers, lost of permanent tooth or erupting permanent teeth), environmental stress e.g. social incompatibility or could be related to another event causing distress and hereditary tendency.

The main signs are exaggerated licking and chewing movements, with pawing at the mouth. In particular the neurological examination is normal. Discomfort appears to be restricted to the oral cavity and lips - there is no obvious discomfort other where in the distribution of the trigeminal nerve, as the nose or eyes. Typically, the discomfort is involving one side only or is worse on one side. The cat might be anorexic and/or not willing to eat. The clinical signs are episodic or continuous. The episodes complete between several minutes to several hours.

Diagnostic investigation

Clinical examination is essential. The main differential diagnose is an oropharyngeal foreign body. The most significant other cause of trigeminal lesions in the cat is neoplasia. The basic difference between FOPS and a dental disease is that in FOPS the reaction to the pain is improper and defined by mutilation.

A serum biochemistry and a haematology should be performed to exclude other systemic disease. A neurological examination should also be performed, with emphasis on cranial nerve function, which is normal most of the times. MRI and cerebrospinal fluid analysis are usual in such cases. These examinations are recommended in any cases with abnormal neurological examination, especially abnormal facial sensation, movement and jaw tone.

Investigate and treat dental disease because the majority of cases of FOPS are triggered by a periodontal disease. Identify the environmental factors which might influence FOPS, it is important to explore the history for possible factors like social stress.

Treatment

The main purposes of treatment are lessen the discomfort, reduce the mutilation and treat or avoid the elemental causes. Discomfort will be controlled if mutilation is limited. Usage of an Elizabethan collar or paw bandaging, even "soft claws" can be helpful as an additional method. It is essential to reduce environmental stress.

Discomfort can be limited by administrating drugs. For mild cases, NSAIDs and/or opioids can be provided. It is considered that NSAIDs could have an effect on the neuropathic pain. Opioids may be admitted in a multimodal rule to manage neuropathic pain, but not as the only analgesic. (Buprenorphine can be suitable for continuing home management for cats). Nonetheless, these painkillers are not repeatedly valid for neuropathic pain. If licensed products such as a combination of NSAIDs and opioids are inefficient for analgesia, then coefficient drugs may be used for the treatment and could be healthful.

Drugs as anti-epileptic (phenobarbital, carbamazepine, gabapentin), typically are the first-line therapy for neuropathic pain and trigeminal neuralgia in humans. They minimize the misfiring of nerves and effectively reduce pain. None of the anti-epileptic drugs are licensed for usage on cats. Owners should be made aware of the risks. Phenobarbitone is preferred to diazepam because of the greater risk of hepatic failure. An alternative is carbamazepine which has been given experimentally for cat's neuropathic pain, but there are no long-term studies on the safeness of carbamazepine in cats. Antidepressants like amitriptyline given to treat neuropathic pain also. Amitriptyline has proper pharmacokinetics for the treatment of FOPS although, it is not confirmed if amitriptyline has efficacy on feline neuropathic pain.

Gabapentin is an anti-convulsant drug but it is more suitable for the treatment of neuropathic pain in people. It has been administered as a monotherapy and in combo with carbamazepine in a feline model of trigeminal neuralgia. The combination of these drugs was evidently impressive. Further other antiepileptic drugs, e.g., levetiracetam or topiramate may be convenient for FOPS as monotherapy or in combination with other drugs.

An IV low-dose of ketamine combined with morphine periodically could be given to prevent or treat neuropathic pain, following the administration of an opioid and an NSAID. Amantadine orally may be used after ketamine, for long-term therapy at home. Local anaesthetics as lidocaine should not be administered in cats. Therapy is long-term and may not be prosperous in some cases.

Prognosis

Initially FOPS is an incidental condition. First episodes may be observed at teething and seconds may be appearing when a cat develops periodontal disease. During the treatment, the discomfort should be decreased within 3 days and surely vanished afterwards 7 days of therapy. Medication should be stopped after 4 weeks if the predisposing conditions have been cured. Unsuccessfully a percentage of cats have continuous signs of disease. Then long-term therapy is recommended.

Environmental stress should be limited. Especially the number of household cats should be minimized to socially suitable levels and cautious attention should be taken care of, if further cats come to the house [1-4].

Conclusion

Conditions of neuropathic pain are a challenge to cure, although experience is limited in veterinary science. Available knowledge has gained from humans and laboratory animal, along with experimental feline models.

FOPS is described by episodes of oral and/or tongue discomfort, provoked in many cases by mouth movements. Burmese cats are affected and an inherited disorder in trigeminal sensory process is not proven. Common situation in a history are the first signs during eruption of permanent teeth Oral lesions frequently are crucial predisposing cause. Conditions of neuropathic pain can be highly motivated by internal and external causes. So, the history should be explored for viable related aspects. Recognition of social incompatibility in a multi-cat household is a key.

It is thought that an autosomal recessive inheritance could be the reason but the available data is limited. A recent study from a genome-wide case-control association resulted in the identification of a locus on cat chromosome C1 associated with FOPS. Previous evidences suggested to a relation on cat chromosome C1, within the low-density lipoprotein receptor-related protein 1 gene (LRP1).

Therapy for FOPS includes NSAIDs plus phenobarbital, carbamazepine, gabapentin or amitriptyline. Treatment is long-term and may not be successful. Further researches are required to define which drugs are most sufficient for treatment and other antiepileptic drugs alike as carbamazepine or gabapentin may result to be more proper. Monitoring of liver function in periods is necessary and a drug serum concentration is suggested for cats during therapy with anti-epileptic drugs.

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