

Peripheral Vestibular Syndrome in a Cat with Foreign Body Otitis Media/Interna

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Abstract : A 15-month-old, intact male, domestic short hair cat was presented with ataxia, protrusion of the right third eyelid, and anorexia. Clinical signs were firstly noted after ear cleaning at home. Symptoms of the Horner's syndrome were evident. However, postural and proprioceptive reaction deficits were not detected on neurologic examination. Otoscopic examination revealed foreign body in right ear canal. A diagnosis of peripheral vestibular syndrome was made based on results of physical examination including neurologic and otic examination, blood work, and magnetic resonance imaging (MRI). Based on these examinations, the present patient was definitely diagnosed as otitis media/interna induced by foreign body. The vestibular signs were resolved 10 days after removal of cotton tips in right ear canal. This case report indicates that home-care cotton swab can iatrogenically induce otitis media/interna in cats.

Key words : cat, ear cleaning, Horner's syndrome, peripheral vestibular syndrome

Introduction

The vestibular system is the primary sensory system that maintains proper balance and posture, and normal orientation of the body relative to gravity (2). Vestibular disease produces varying degrees of loss of equilibrium causing imbalance and ataxia (1,2,7).

Feline vestibular disease can be divided into peripheral and central categories(3-5). Peripheral disease involves cranial nerve (CN) VIII and its receptor. Clinical signs can include normal mentation, a head tilt towards the side of the lesion, CN VIII with or without VII neuropathy, vestibular ataxia and horizontal or rotatory nystagmus that does not change with a position change. These cats should have normal proprioception and strength. Causes of feline peripheral vestibular disease can include idiopathic vestibular syndrome, otitis media/interna, nasopharyngeal polyp, trauma or ototoxicity. Central vestibular disease affects structures found within the brain stem or cerebellum. Signs are similar to peripheral vestibular disease except that ipsilateral weakness, proprioceptive loss and/or complete CN deficits may be observed, as well as a changing nystagmus along with an altered level of consciousness. Causes include inflammatory/infectious diseases such as feline infectious peritonitis (FIP), toxoplasmo-

sis or cryptococcosis, neoplasia (lymphoma), thromboembolism, or trauma (4,5).

Diagnosis of vestibular disease includes a thorough owner history, physical and neurologic examinations, blood work, radiographs, otic examination under anesthesia, cerebrospinal fluid analysis, and if warranted, computed tomography scan or magnetic resonance imaging (MRI) (3,6).

This case report describes peripheral vestibular syndrome developed by a foreign body (cotton tip) after ear cleaning in a cat.

Case report

A 15-month-old, intact male, domestic shorthair cat was presented due to ataxia, protrusion of the right third eyelid, enophthalmos, miosis on right pupil. On the history, the owner cleaned both right and left ears with cotton swab one day before the presentation, and the patient was then depressed following the ear cleaning. Physical and neurological examination revealed mild depression and symptoms of Horner's syndrome (i.e. unilateral protrusion ptosis of the third eyelid, enophthalmos, miosis of right pupil; Fig 1). However, both direct and consensual pupillary light reflexes (PLR) were normal. The cat showed that postural and proprioceptive reaction deficits were not observed and the spinal reflexes were normal except ataxia.

Complete blood count (CBC) profiles revealed within ref-

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Fig 1. A illustration of Horner's syndrome in the present case. Note protrusion of the third eyelid, constricted pupil, enophthalmos and ptosis of the right eye (arrow).

erence ranges. The serum chemistry profiles exhibited mildly increased alanine aminotransferase (55 U/L; reference range, 11 to 50 U/L) and alkaline phosphatase (129 U/L; reference range, 0 to 67 U/L). Based on results obtained here, most likely tentative diagnosis included peripheral vestibular disease which resulted from foreign body-induced otitis media. Ears were examined with otoscope to confirm the lesion of the ear. On otoscopic examination, foreign body in right ear canal was founded, which were suspected as cotton tip fragments. Otic cytology revealed numerous bacterias (cocci). However the bacterial/fungal culture and sensitivity test were not performed due to the client's refusal for further examination of bacteria.

Although foreign body was found in right ear canal and this case was tentatively diagnosed as peripheral vestibular disease, central nervous system (CNS) could be involved in this case. Thus, we examined a brain MRI scan with 0.2 Tesla unit (E-Scan, ESAOTE, Italy). On MRI findings, the

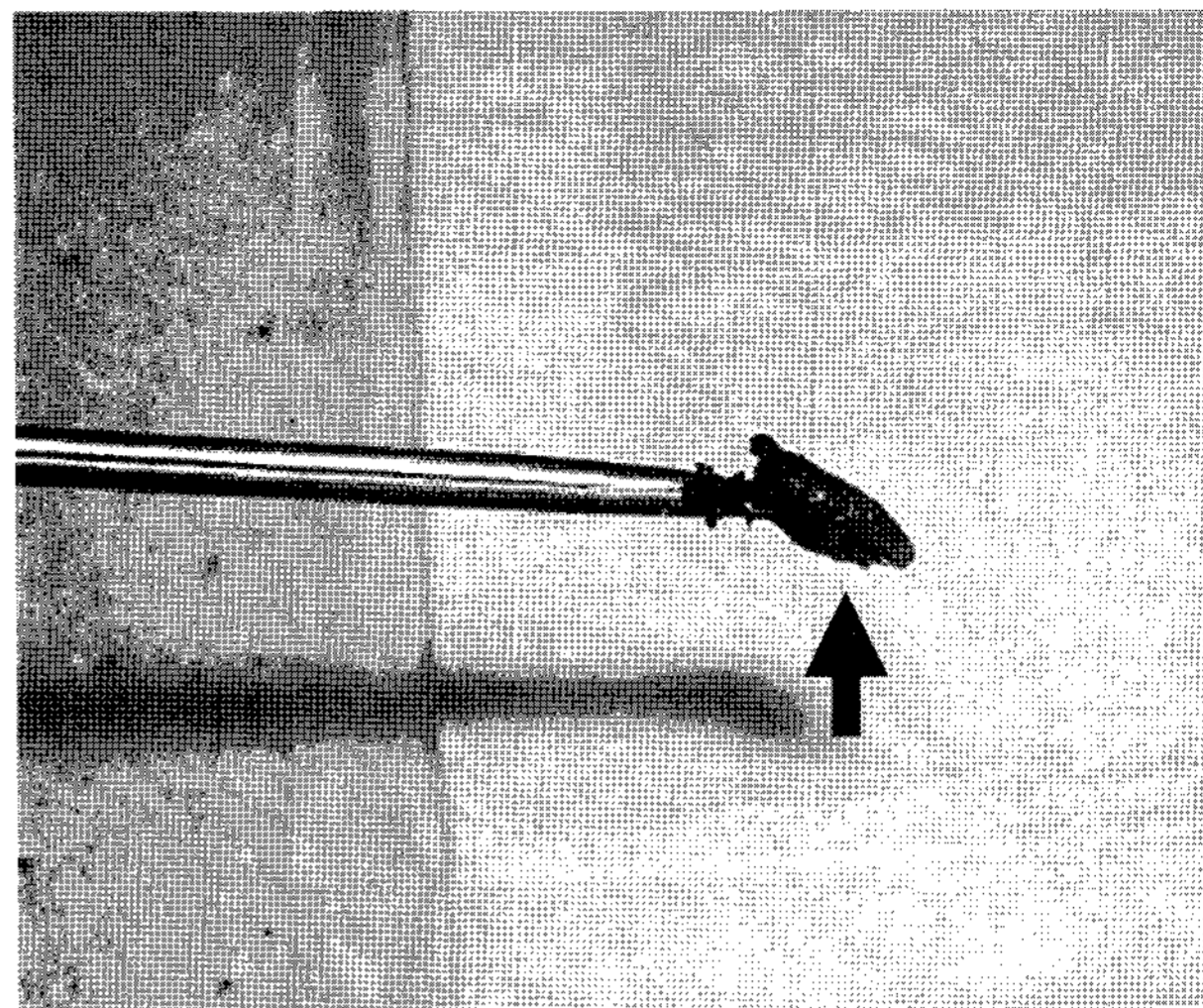


Fig 3. A photograph of a piece of cotton tip which was removed from right ear canal (arrow).

right ear canal was thickened and narrowed, and hyperintense lesion was found in the right tympanic bulla (Fig 2). Based on these examinations, the present patient was definitely diagnosed as otitis media/interna induced by foreign body.

Cotton tip fragment in right ear canal was removed using ear polypus forceps under tranquilization with acepromazine malate (Sedaject[®], Samu median, Korea; 0.03 ml/kg, IV) (Fig 3).

The patient was treated with prednisolone (prednisolone, Korea pharma, Korea; 1 mg/kg, PO, q 12h) and enrofloxacin (Baytril, Bayer AG, Germany; 5 mg/kg, PO, q 12h). The clinical signs were improved gradually after treatment. Clinical signs including Horner's syndrome, ataxia and depression were improved to normal 10 days after initial management.

Discussion

Disorders of the vestibular system occur frequently in cats

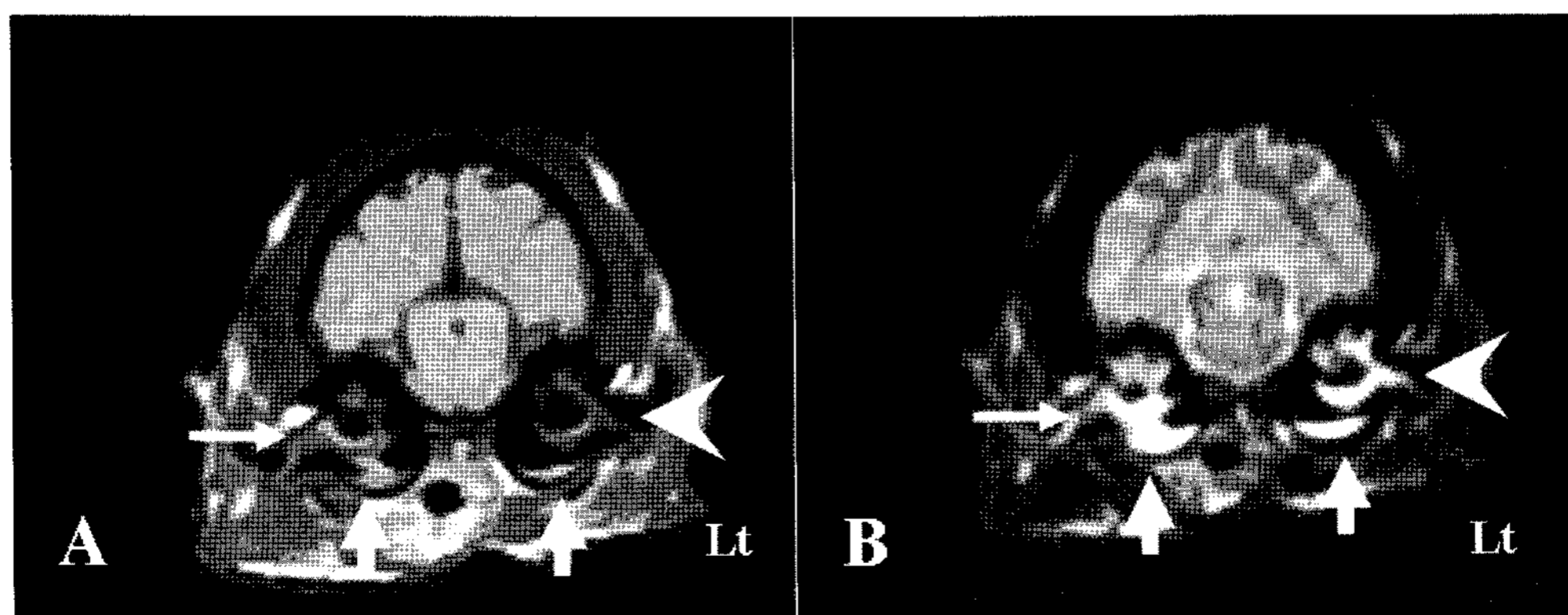


Fig 2. MR images of the present case. Panels A and B shows transverse T1- and T2-weighted MR images at the level of the tympanic bulla, respectively. The tympanic bullas on both sides are filled by exudates and inflamed (big arrows). The right side tympanic bulla show more severe changes than those of left side. Small arrow indicates the cotton tip in right ear canal and arrowhead show inflamed left ear canal.

(4,5). Until recently, however, there are a few reports about peripheral vestibular syndrome in cats when compared to dogs (3-5,7). Clinical signs of peripheral vestibular dysfunction result from disorders of the middle and inner ear and involve the receptors in the labyrinth and the vestibular nerve (7). However, vestibular dysfunction usually does not occur with disease of the middle ear alone. The majority of middle ear diseases extend to involve the inner ear, and result in signs of peripheral vestibular disease (7). Middle ear lesions usually produce head tilt only, in the absence of other signs (5). Based on the neurologic examination in this case, head tilt was not observed and other vestibular signs were noted. Inner ear disease, which actually involves the receptors and vestibular nerve within the petrosal bone, usually produces other signs in addition to the ipsilateral head tilt, falling, rolling, circling, nystagmus, positional strabismus, and asymmetrical ataxia (3-5,7). Horner's syndrome (miosis, ptosis, enophthalmos, and protrusion of the nictitating membrane) of the ipsilateral eye may be present with either middle or inner ear disease in dogs and cats, since the sympathetic trunk passes through the middle ear in close proximity to the petrosal bone (1,2,7). The present case had otitis media/interna and showed asymmetrical ataxia with Horner's syndrome such as miosis, protrusion of the third eyelid of the right eye, which are consistent with the reports described previously (1,4-7). These clinical signs were initiated after home-care ear cleaning with cotton swab.

The majority of ear infections are caused by bacteria (6). Occasionally, yeast infection has been also reported (6). Rarely, fungal infection may be confined to the middle ear (e.g., *Cryptococcus* sp.). In addition, foreign bodies such as grass awns may initiate inflammation and predispose to secondary bacterial infection in US (3,6). Until recently, there have been no reports that grass awns induced otitis externa and/or media in our country. Thus it appears that this could be occurred in limited region in other countries. The cotton tip fragment in ear canal with secondary bacterial infection might be the main cause of otitis media/interna in the present case.

Diagnosis of otitis media/interna is based on the otoscopic examination and diagnostic imaging (3). Otoscopy may reveal otitis externa, and evidence of erosion or rupture of the tympanic membrane. Inflammatory exudates or fluid should be submitted for culture and sensitivity testing. Imaging (skull radiographs, CT, or MRI) may reveal a fluid or soft tissue density in the tympanic cavity, or sclerosis and lysis of tympanic bulla and adjacent bones. Conventional radiographs, although easily obtained in practices, may be difficult to interpret and have a low sensitivity. Only a few reports mention the use of MRI in the diagnosis of canine or feline ear disease (3,6,7). CT allows better visualization of the bony structures and is indicated where osseous changes are of greatest diagnostic importance, whereas MRI can discern soft-tissue components including the membranous laby-

rinth and its associated neural elements (3). We tentatively diagnosed this case as iatrogenic peripheral vestibular syndrome with foreign body otitis media/interna based on a complete history, physical and neurological examinations and otoscopic examination. However, this case showed secondary bacterial infection on ear canal. The extension of infection to involved brain stem by means of the internal auditory meatus may occur and to ruled out CNS vestibular disease, we examined a brain MRI scan. Otoscopy and MRI played a significant role to diagnose the present case.

Prognosis of bacterial otitis media/interna is usually good when long term oral antibiotic therapy is initiated on the basis of the results from culture and sensitivity testing (1,6). Although clinical signs may improve within 1-2 weeks, antibiotic therapy should be continued for at least 6 weeks. In more chronic cases, unresponsive to medical therapy, surgical drainage of the tympanic cavity may be necessary by means of a lateral or ventral bulla osteotomy. The vestibular signs in this case were resolved with antibiotics and anti-inflammatory therapy after removing foreign body from right ear canal.

In conclusion, this report describes the clinical findings, laboratory findings, imaging characteristics, and successful management of iatrogenic vestibular syndrome in a cat with foreign body otitis media/interna. In addition, when dog owners apply cotton tip for ear cleaning at home, more attention should be paid.

Acknowledgements

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