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OTITIS EXTERNA AND OTITIS MEDIA IN CATS IN ASSIUT: A RETROSPECTIVE STUDY OF PRESENTING SIGNS, CAUSES, DIAGNOSIS AND TREATMENT

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ABSTRACT

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In this study, records of cases admitted to the Small Animal Clinic (SAC), Veterinary Teaching Hospital (VTH) at Assiut University, between years 2007-2011 for investigation of signs of otitis were reviewed and data analyzed. Points of analysis comprised presenting clinical signs, results of otoscopic examination, identification of cause of otitis and outcome of treatment of each cat. Treatments used for these cases were either ivermectin injection or topical treatment with antimicrobial/anti-inflammatory ear drops as well as a ceruminolytic agent for cleansing the ear to increase effectiveness of medications used. Total number of cases with signs of otitis was 76 cats. Otitis cases comprised 19.8% of the total cases presented at the SAC in the study period. The most common presenting signs were head shaking, itching and ear wax in 67.11% of cases. 21.05% of cases were presented with severe inflammation, pain and alopecia around the ear pinna. A small number of cats were presented with signs of alopecia around the ear pinna and concomitant ring worm (3.95%). The remaining 7.89% were presented with very mild ear scratching in one or two ears. Sex was not a confounding factor as both males and females were equally represented among cases (51% males: 49% females). Turkish Angora and Persian cat breeds were over-represented (39.5% and 35.5% respectively). 68 cats were treated with ivermectin injections (1-4 injections) and ten cats were treated with topical antibacterial and anti-inflammatory. 67.11% of treated cases completely recovered and 32.89% of treated cases were not brought back for follow-up visits and therefore information regarding full recovery was not available. When evaluating a patient with otitis externa, it is important to determine the primary cause as well as the predisposing and perpetuating factors of the otitis so as to manage the otitis properly. The first diagnostic procedure that should be performed on a patient with a complaint of otitis externa is an otoscopic examination.

Key words: Otitis Externa**,** Small Animal Clinic (SAC), otoscopic examination**,** ivermectin

INTRODUCTION

Otitis by definition is inflammation of the ear canal and/or the pinna. Otitis externa is a term used when only the external canal, outside of the tympanic membrane, is involved. When the tympanum and the tympanic bulla are involved, the term otitis media is used. Otitis interna implies damage to the hearing apparatus; neurologic symptoms and deafness are usually present (Kennis, 2013). Otitis media, an inflammatory disease in the middle ear cavity, is a common disease process that goes unrecognized in most veterinary practices (Gotthelf, 2004).

In dogs, secondary otitis media occurs in approximately 16% of acute otitis externa cases and in as many as 50% to 80% of chronic otitis externa cases (Cole, 1998; Little *et al.*, 1991). In the cat, otitis can also be a challenging clinical problem because the commonly used clinical approach to diagnosis and treatment of canine otitis rarely yields satisfactory results when applied to cats (Kennis, 2013).

In early stages of acute otitis externa, the underlying process causing inflammation of the external ear canal initially results in varying degrees of erythema of the pinnae, external meatus, and lining of the external canal. Therefore, a wide range of clinical signs can occur, including head shaking, ear scratching, otic discharge (ceruminous or purulent), evidence of self-trauma and excoriations (including aural hematomas and acute moist dermatitis near the base of the ear), malodor, swelling, and pain (Rosser, 2004). In cases of recurrent or chronic otitis externa, clinical signs may progress to include proliferative changes. The external ear canal can become stenotic and is ultimately occluded; the tympanum becomes more susceptible to rupture and the development of a concurrent otitis media (Rosser, 2004). Otitis media without overt otitis externa may occur more

commonly in the cat than the dog. It is usually a unilateral problem but may be bilateral (Kennis, 2013). Clinical signs may include head shaking or pawing at the ears and in severe cases cats may show head tilt to the affected side. In dogs, otitis media is frequently associated with chronic otitis externa leading to damage of the tympanic membrane. The diagnosis of otitis media is usually made during otoscopic examination. The tympanic membrane may seem to be ballooning outward. Fluid and air bubbles may be seen behind the intact tympanum (Kennis, 2013). Otitis media should also be considered when the veterinarian is presented with a patient showing any neurologic disease affecting the head, including vestibular disease, Horner's syndrome, or facial nerve damage (Gotthelf, 2004).

Causes of otitis externa are divided into predisposing factors, primary causes and perpetuating causes (Rosser, 2004). Predisposing factors include anatomic and conformational factors, excessive moisture, iatrogenic factors and obstructive ear disease. Perpetuating factors and these may include bacteria, yeast and otitis media. Primary causes of otitis externa include parasites such as, Otodectes cynotis (ear mite), *Demodex canis, Otobius megnini* (spinous ear tick), *Sarcoptes scabiei, Notoedres cati*, Cheyletiella spp, and Eutrombicula spp (chiggers), Foreign bodies, hypersensitivity and allergic diseases, keratinization disorders and autoimmune diseases.

Treating otitis can be frustrating and often described as a form of art (Morris, 2004). Treatment of otitis in cats needs a close inspection of the ear canal followed by the elimination of the factor or factors responsible for the inflammation of the ear. The local application of topical ear remedies containing an antibiotic, an antifungal, a dermocorticoid and/or an acaricide is what is needed in most cases. Many topical ear treatments are available on the market, but most contain a weak or moderate acting corticoid (prednisolone or hydrocortisone) (Morris, 2004; Germain, 2008).

Plenty of reports are available that describes the presentation, incidence and prevalence of otitis in dogs and cats in the west (Baxter and Lawler, 1972; Baba and Fukata, 1981; Henneveld *et al.*, 2012). However, similar studies describing the disease in Egypt are not available. This is the first report to describe the presentation, prevalence and therapeutic outcome of cases submitted to the Small Animal Clinic, Faculty of Veterinary Medicine, Assiut University.

ANIMALS and METHODS

Collection of Data

Data for this study were obtained by reviewing records of cases examined at the Small Animal Clinic, Faculty of Veterinary Medicine, Assiut University, Egypt between years 2007 and 2011. Both canine and feline case records were included. Aspects of analysis included: total number of cases, breed, age, sex, presenting clinical signs, cause of otitis, and therapeutic outcome. Presenting clinical signs were grouped into:

1. Mild and occasional itching
2. Alopecia behind the ear pinnae or the head
3. Headshaking, scratching of or around ear pinnae and presence of ear wax
4. Redness, severe inflammation, pain and head tilt.

Complete recovery was achieved with clinical signs resolving as reported by the owner and after otoscopic examination of the cat on follow-up visits. Only cases with complete data sets were included in this study (n= 76).

Statistical analysis

All data except total number of cases are presented as percentage of the total. For age, simple statistical analysis was carried out to present results as range, mean and median for each species per year. Microsoft office 2007 excel was used to generate these data.

RESULTS

In this study, the records of feline cases presented at the SAC, VTH at the Faculty of Veterinary Medicine, Assiut University with signs of Otitis Externa (OE) and Otitis Media (OM) were reviewed. Only cases with complete records were included in the analysis (n=76) in years 2007-2011.

The ages of cats with otitis ranged from 1.5 to 72 months old (mean= 10.5; median = 5.5) (Table 1). There was no sex predisposition as both males and females were equally represented in the study population (male = 51%, females = 49%; Table 2). Turkish angora and Persian cat breeds were over-represented as the majority of cats with signs of otic inflammation were of these breeds (Turkish = 39.47%, Persian = 35.53%; Table 2 and Fig. 1), whereas only 7.89% of cats were of the Siamese breed. Non-pure-bred cats (domestic short-hair and domestic long-hair) collectively constituted 17% of the study population.

The majority of cats were presented with head shaking, itching and presence of ear wax (67.11%), followed by those presented with signs of severe inflammation such as redness and severe pain on examination (21.05%). In the later group of cats only one cat showed head tilt (Plate 1, A). Smaller number of cats was presented with mild sign of alopecia around the ear pinnae or the head (7.89%) and only

3.95% of cases were presented with alopecia alone (Table 3, Plate 1, B)

Cause of ear inflammation was detected in the majority of cases (59.21%) to be due to ear mite infestation through direct visualization of ear mites by otoscopic examination. Only 1.32% of cases, otitis was secondary to atopy (Table 4, Fig. 3). Bacterial and fungal infection either secondary to otitis or as a cause of otitis was found in 3.95% each.

Table 1: Statistical analysis of age of cases included in the study

	Age range (month)	Mean	Median
Study Group	1.5-72	10.5	5.5

Min, minimum age, Max, maximum age of cases included in the study

Table 2: Percentage of breeds of cats submitted to the Small Animal Clinic with Signs of Otitis

	Sex		Breed				
	Male	Female	Persian	Turkish	DSH	DLH	Siamese
Total Number	39	37	27	30	10	3	6
Percentage of total	51.32%	48.68%	35.53%	39.47%	13.16%	3.95%	7.89%

Percentage of each breed calculated from the total number of cases included in the study. DSH, domestic short-hair, DLH, domestic long-hair.

Table 3: Number and percentage of cats presented with clinical signs suggestive of otitis

Presenting Clinical Signs	Cats	Percentage
Headshaking, scratching, ear wax	51	67.11%
Redness, severe inflammation, Pain, *head tilt	16	21.05%
Mild and occasional itching, Alopecia	6	7.89%
Alopecia, concomitant ringworm	3	3.95%
Total	76	100%

*head tilt was only noticed in one cat in which otitis media was so severe and perforation of tympanic membrane was suspected

Table 4: Diagnostic outcome of cats presented with signs of otitis

Cause	Cats	Percentage
Ear mites	45	59.21%
Atopy	1	1.32%
Secondary bacterial infection	3	3.95%
Concomitant fungal infection	3	3.95%
Idiopathic	24	31.58%
Total	76	100%

Percentage of each diagnostic outcome was calculated to the total number of cats presented with signs of otitis

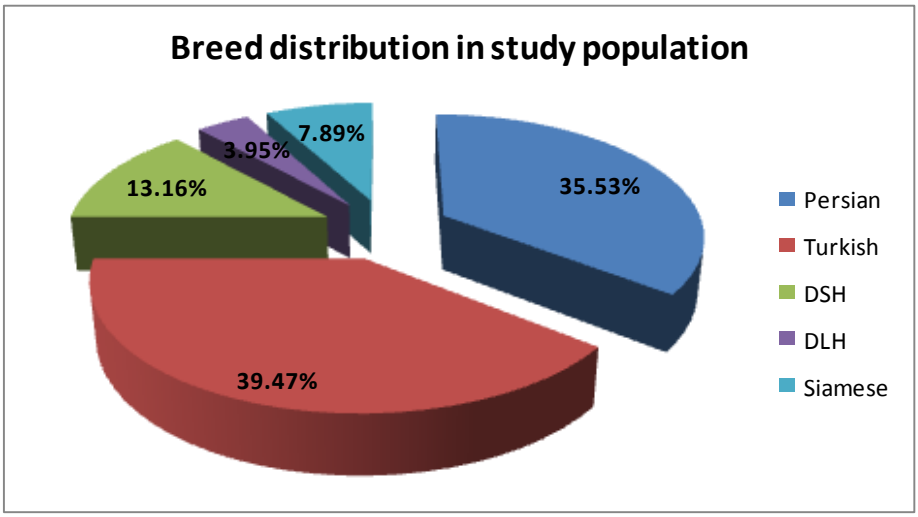


Figure 1. Cat breed percentage of the study population

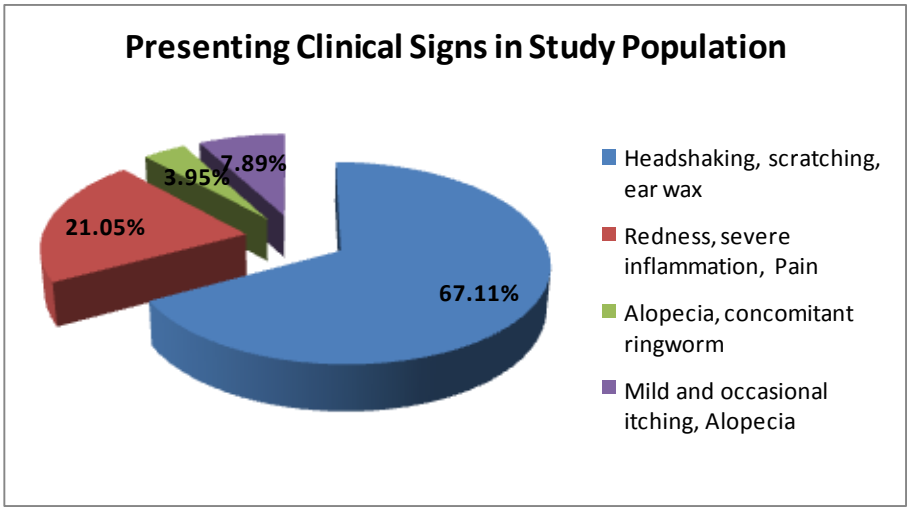


Figure 2. Percentage of cats presented with each group of clinical signs

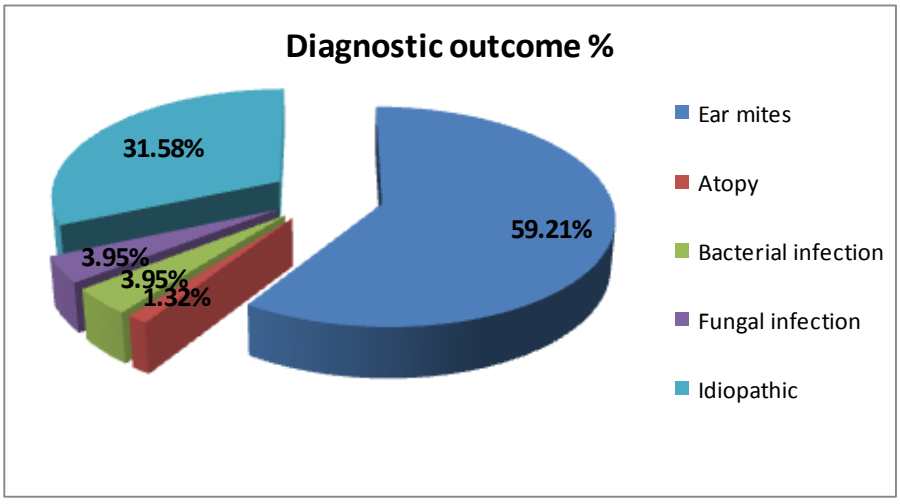
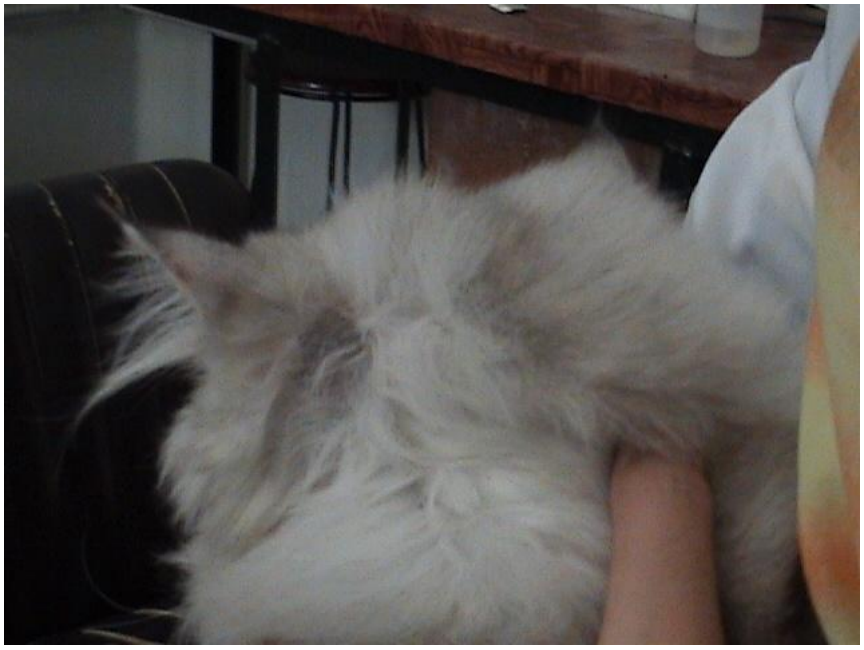


Figure 3. Breakdown of number and percent of causes of otitis in studied cats



A

B

Plate 1: Clinical signs of otitis in cats. A) a cat showing head tilt due to severe otitis media; B) a cat with alopecia around the ear pinna due to otitis externa; C) Otoscopic examination of a cat showing signs of otitis.

DISCUSSION

In this study, records of cases presented at the Small Animal Clinic, Faculty of Veterinary Medicine at Assiut University with signs of otitis externa and otitis media between years 2007-2009 were reviewed. To the authors' knowledge, this is the first report to describe this disease in cats in the region. Reports describing similar retrospective study are not available to compare to this study, however, other researchers study aspects of the disease in cats and dogs such as associated or secondary infections (Crespo *et al.*, 2000; Henneveld *et al.*, 2012; Lilenbaum *et al.*, 2000; Wagner and Stallmeister, 2000). Similar studies however were reported in the 70s and 80 and could not be obtained for review (Baba and Fukata, 1981; Baxter and Lawler, 1972).

Cats affected with otitis were more likely to be of younger age in this region. Although similar studies

were not easily found in literature, other investigators have reported in a study of feral cats in Greece that the younger age group of kittens between 3 and 6 months had significantly higher mean intensity of otitis compared to cats aged under 3 months (Lefkaditis *et al.*, 2009). In cases seen in SAC, the majority of owners are more likely to bring their kittens for a general health check when they first acquire the kitten to avoid zoonotic diseases and to consult on proper management of kittens. Kittens are more likely to acquire ear infection from the pet shop where they are kept in cages with other animals and in close proximity to birds and rabbits which could be a source of infection. Furthermore, older cats are more likely to have received proper veterinary care and are more able to efficiently groom themselves than younger kittens which reduce the incidence of the disease in these cats. We have also recently reported that SAC, VTH at Assiut University tends to receive a younger demographic of cats and dogs which is probably because this culture of keeping small pets is relatively new to the area (Waly, 2013).
There was no sex predisposition in the studied cases. This agrees with a previous report where no statistical significance was found between males and females for neither prevalence nor intensity (Lefkaditis *et al.*, 2009). There was, however, an over-representation of certain cat breeds in this study (Turkish angora and Persian). This is likely due to the popularity of these two breeds among cat owners in the area (Waly, 2013). Similar breed predisposition has not been previously reported in the cat. Certain dog breeds on the other hand are more likely to suffer from otitis and ear infections due to anatomical deformities in their ears and the same has been reported in cats with soft-palate abnormality (Angus *et al.*, 2002; Girao *et al.*, 2006; Rosser, 2004; Woodbridge *et al.*, 2012).

Presenting clinical signs were as described in literature (Gotthelf, 2004; Kennis, 2013; Morris, 2004; Rosser, 2004). The majority of cases showed typical signs of otitis and a smaller percentage was presented with severe signs of otitis. In these severe cases the owners have neglected to have their cats checked in a suitable time to avoid progression of the disease. In cases where infectious cause or allergic cause is resulting in otitis, the primary cause have to be treated for the signs to resolve. We also found that the majority of cases were infested with ear mites. In a previous report, sampling of feral cats revealed that 37% of the study cats were infested with Otodectes cynotis, out of which 89 % showed signs of otitis externa (Akucewich *et al.*, 2002). This indicates that cats infested with ear mites do not always exhibit the typical ear discharge and inflammation of the ear canals. In another study of feral cats in Greece, prevalence of ear mite infestation was 14.02% (Lefkaditis *et al.*, 2009). Although our study did not include feral cats, the majority of cats seen at the SAC come from pet shops or from multi-cat households in which transmission of infestation or infection between cats is common due to the social behavior of the cats and the close proximity to other animals in case of pet shops. A smaller percentage of cats were exhibiting signs of bacterial and fungal infection. These are considered perpetuating factors of otitis and require treatment for otitis to resolve (Gotthelf, 2004; Kennis, 2013; Morris, 2004; Rosser, 2004).

In conclusion, feline otitis externa and otitis media are commonly encountered diseases in our region. Although the majority of cases are caused by ear mite infestation, other causes of otitis cannot be excluded when examining or treating cats with signs of ear inflammation. Although this disease is curable, it is debilitating to the cat and can progress to otitis interna if left untreated. We are currently conducting a case-control study comparing three different medications to treat otitis externa and media in cats. The results of that study along with this one should help direct veterinarians in Egypt to the best treatment protocol for this disease.

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إلتهاب الأذن الخارجية والوسطى فى القطط بأسيوط: دراسة راجعة للأعراض، الأسباب، التشخيص والعلاج

نشوي عصمت والى ، ميادة خلف

يعتبر مرض إلتهاب الأذن الخارجية واحد من أكثر الأمراض شيوعا فى القطط والكلاب . الأعراض تتمثل فى هز الرأس، وهرش الأذن. بعض الحيوانات لا تظهر الأعراض حتى تزداد شدة الإلتهاب. فى هذه الدراسة تم مراجعة تقارير الحالات الواردة إلى عيادة الحيوانات الأليفة بكلية الطب البيطري بجامعة أسيوط بين أعوام ٢٠٠٧-٢٠١١ للفحص نتيجة ظهور أعراض إلتهاب الأذن الخارجية والوسطى. نقاط التحليل شملت الأعراض، نتائج فحص الأذن، سبب الإلتهاب، ونتيجة العلاج . علاج المرض تمثل في إستخدام الأيڤرمك أو باستخدام العلاج الموضعي المضاد للعدوى والإلتهاب . عدد الحالات المدرجة بالدراسة بلغ ست وسبعون حالة . بالمقارنة بعدد الحالات الواردة إلى العيادة في الأعوام المدروسة كانت نسبة الحالات المصابة بالمرض ٨.١٩٪ .أكثر الأعراض شيوعا كان هز الرأس وهرش الأذن وازدياد إفراز شمع الأذن فى ١١.٦٧٪ من الحالات .٠٥.٢١٪ من الحالات كان مصابا بالتهاب شديد مع أعراض ألم و قراع حول الأذن .عدد صغير كان مصابا بأعراض طفيفة مصاحبة أيضاً لمرض القوباء الحلقية) ٩٥.٣٪ .(النسبة المتبقية والتى بلغت ٨٩.٦٪ أظهرت أعراض خفيفة متمثلة فى سقوط طفيف للشعر حول الأذن .لم يؤثر إختلاف جنس الحيوان على معايير الدراسة حيث اشتملت على عدد متساوي من الذكور والإناث . فصائل القطط الرومي والفارسي كانت الأكثر شيوعا) ٥.٣٩٪، ٥.٣٥٪ .(ست وثمانون قط تم علاجهم بحقن الأيڤرمك) ١-٤ جرعات (وعشرة قطط تم علاجهم بالعلاج الموضعي من مضادات الإلتهاب ومضادات البكتيريا .١١.٦٧٪ من الحالات شفيت تماماً من المرض، ٨٩.٣٢٪ من الحالات لم تعاود الكشف وذلك لم تتوفر المعلومات حول تمام الشفاء . أثناء تقييم مريض بإلتهاب الأذن فإن التعرف على مسبب المرض والعوامل المساعدة يكون ضروريا لمعاملة المرض بصورة صحيحة . أول طرق التشخيص تجرى على المريض هى فحص الأذن بالمنظار .