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Clinico diagnostic study of otitis externa and its therapeutic management in a Labrador retriever dog

J Shashank, M Fibi Rani, J Jyothi and K Satish Kumar

Abstract
3 years old Labrador Retriever was presented to the Veterinary Clinical Complex (VCC), College of Veterinary Science, Rajendranagar, Hyderabad with a history of restlessness, head tilt and frequent ear scratching. Clinical examination revealed excoriations on ear pinna, otorrhea with discharges varying from yellowish brown to white purulent in colour, head shaking, pain on palpation of the ear, ear rubbing and frequently tilting of head to one side. Based on clinical and laboratory examinations it was diagnosed as otitis with mixed infection of *Malassezia* and *Staphylococcus.* The dog was treated with enrofloxacin, chlorpheniramine maleate along with oral ketoconazole, multivitamins and immune boosters. Affected ear was also managed with epiotic ear cleanser and pomisol ear drops. After 15 days of treatment, the animal showed clinical improvement but recovered completely after 30 days.

Keywords: Labrador retriever, otitis externa, *Malassezia*, *Staphylococcus*, enrofloxacin

Introduction
Otitis externa defined as inflammation of the external ear canal, is a common and often protracted or recurrent clinical condition in dogs associated with multifactorial disorders and accounting for up to 10 to 20 percent of consultations in canine practice (Senthil *et al.*, 2010) [1] . Dogs may be genetically or anatomically predisposed to this condition (Goodale *et al.*, 2016) [2]. The maximum incidence of otitis externa in dogs of age between 1 to 3 years followed by dogs between 3 to 6 years of age (Agnihotri *et al.*, 2014) [3]. Certain breeds of dogs such as Labrador Retrievers, German Shepherds and Cocker Spaniels have more ceruminous or wax glands in their horizontal ear canals that increase their chance of developing otitis externa. Breeds that have an increased number of hairs in the horizontal canal, such as poodles can also be predisposed to otitis externa (Sharma *et al.*, 2016) [4]. The etiological factors of otitis externa can be categorized as primary, predisposing and perpetuating factors. Primary causes of otitis externa include allergy or hypersensitivities, hypothyroidism, autoimmune diseases, keratinisation diseases, foreign bodies of which atopic dermatitis is a most common primary cause of otitis externa. The predisposing factors for otitis externa are ear confirmation, excessive moisture, obstructive ear disease, systematic disease and treatment affects (Paterson, 2016) [5]. Perpetuating factors include infectious agents such as bacteria and yeast. Humid environment and excessive moisture in ears from swimming or bathing promote bacterial growth. Excessive trauma to the ear canal resulting from exuberant ear cleaning or trauma from instruments used in the ear canal may allow bacterial colonization (Balappanavar and Vasant 2013) [6]. Otitis media, chronic pathological changes of the ear canal, and iatrogenic causes such as contact reactions to medications also acts as perpetuating factors. Clinical signs of otitis externa include head shaking, ear scratching and pain on palpation of ear. An otic discharge that may be malodorous is often present. In acute cases, inner ear pinna and ear canal are usually erythematous and swollen. Pinnal alopecia, excoriations and crusts are also noticed. Stenosis, accompanied by fibrosis and papular to nodular hyperplasia of the walls of the canal, allows further microbial growth that perpetuates disease (Huang and others 2009) [7].

Bacteria and yeast, are present in low numbers in normal ears and these are opportunistic species that replicate under favourable conditions created by another primary cause (Tater *et al.*, 2003) [8]. *viz.*, canine otitis externa is very often complicated by combined bacterial and yeast infections. The normal ear canal microflora consists of coagulase-positive, coagulase-negative *Staphylococcus sp*., haemolytic *Streptococcus sp*., *Proteus mirabilis, E. coli, Pseudomonas aeruginosa* etc. (Greene, 2006) [9]. Diagnosis of otitis externa can be done by otic examination and cytology of otic discharge (Hernandez-Escareno *et al.*, 2012) [10].

Though not a life threatening ailment, it can be a frustrating disease for canine patients and their owners.

2. Materials and Methods

A 3 year old male labrador retriever was presented to the Veterinary Clinical Complex, College of Veterinary Science, Rajendranagar, Hyderabad with the history of frequent ear scratching, dull and depression. Detailed clinical examination revealed poor general condition, excoriations and erythema of ear pinna, otorrhea with yellowish brown to white cloudy purulent in colour, frequent head shaking along with pain on palpation of the ear, odorous discharge from the affected ear (Fig.1 and 2). The dog was previously treated by a local vet for a couple of times, but no complete recovery was reported.

Sample was collected using a sterile ear swab and inserted at the level of vertical and horizontal ear canal junction, rotated in the single direction and withdrawn (Fig. 3 and 4). Swabs collected were gently rolled onto a clean dry glass slide for cytology examination, after staining with field stain and examined under oil immersion objective (100X) of the microscope for rapid assessment of any infectious agents as described by (Mactaggart, 2008) [11]. Another sample was also collected using sterile swab and processed for culture and antibiogram.

3. Results

Microscopic examination of ear swab revealed *Malassezia* and Cocci bacteria., and *Staphylococcus* organisms were isolated by culture examination. Based on the clinical history and laboratory findings, the present case was concluded as mixed infection with *Malassezia* yeast (Fig. 5) and *Staphylococcus* bacteria (Fig. 6). Conducted antibiotic sensitivity tests and noticed that *Staphylococcus spp.* was more sensitive to enrofloxacin (Fig.7). Complete blood picture count revealed increased white blood cell counts (Table.1). Based on clinical and laboratory findings, treatment was initiated with enrofloxacin @5 mg/ kg body wt. and Chlorpheniramine maleate @10 mg/ kg body wt. SID, I/M for 5 days, ketoconazole - 200 mg, ½ tablet daily, for 14 days, supportive therapy with Liv-52 (Himalaya) syrup @10 ml BID for 1 month and Immuncare (Vetrina) @6 ml BID for 1 month. Ear cleanser: Epiotic, weekly twice for 1 month. Ear drops: Pomisol, twice daily for 14 days. After 15 days of treatment, the animal showed clinical improvement *i.e.*, decreased ear itching and rubbing, decreased excoriations on ear pinna and no head shaking (Fig.7 and 8). Microscopic examination of ear swab noticed decreased number of yeasts and bacterial organisms, but recovered completely after 30 days.

Fig 1: Yellowish brown greasy ear exudates

Fig 2: Excoriations on ear pinna

Fig 3-4: Swab sample collection

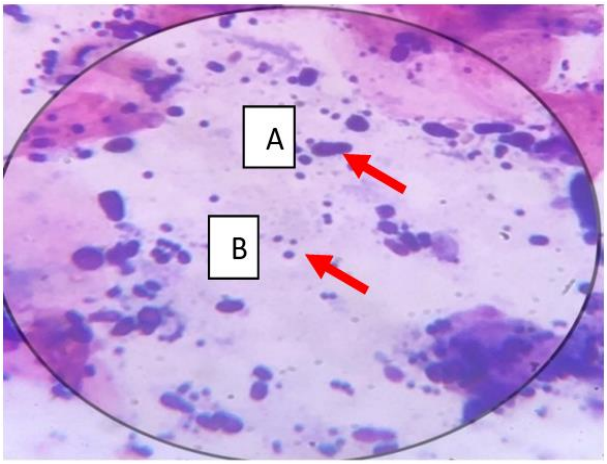

Fig 5*: A. malassezia* yeast B. Cocci bacteria under microscope (100X)

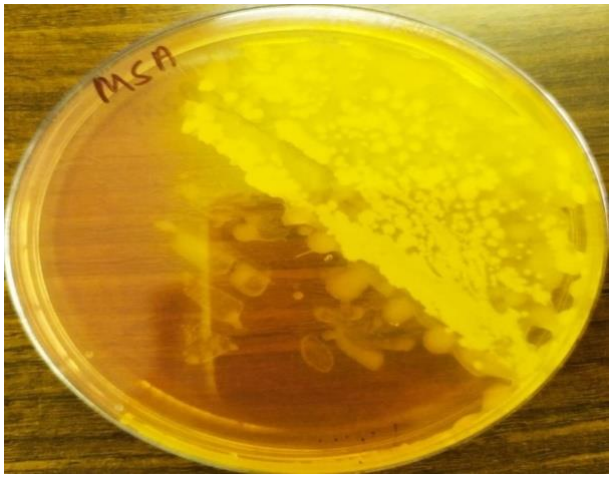

Fig 6: Growth of *Staphylococcus* on MSA agar.

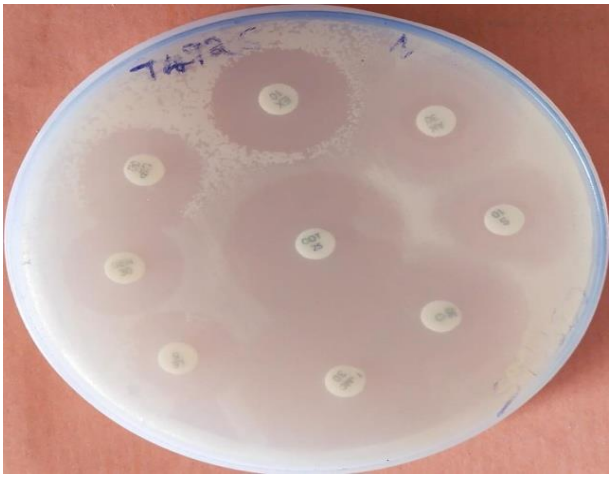

Fig 7: Isolated *Staphylococcus spp.* showing sensitivity to enrofloxacin

Fig 8-9: Clinical improvement of animal after treatment

Table 1: Hematological parameters

Parameter	Before treatment	After treatment	Normal ranges
Hemoglobin (g/dl)	12.8	13.4	12-18
PCV (%)	38	44	37-55
RBC (10^6/µl)	6.87	7.10	5.5-8.5
Platelets (10^5/µl)	2.32	2.53	2-5
WBC (10^3/µl)	21.4	16.33	6-17
Neutrophils (%)	91	78	55-80
Lymphocytes (%)	30	34	12-30
Monocytes (%)	2	3	3-10
Eosinophils (%)	3	1	2-10
Basophils (%)	0	0	0-1

4. Discussion

Otitis externa is a multi-factorial etiology disease commonly affecting canines. It represents a complex pathology associated to infections caused by bacteria and yeast, many times not responding to treatments. The most common causes directly inducing otitis externa are atopy, contact allergies, food hypersensitivity, flea-bite allergy, foreign bodies, autoimmune diseases, keratinization disorders along with certain secondary causes *viz.*, bacteria and yeast. (Scott *et al.*, 2001) [12]. The clinical signs recorded in the present dog suffering with otitis externa such as head shaking, ear pain, ear scratching, erythema, inflammation and swelling of ear canal, and foul smell discharges are in accordance with scott *et al.* (2001) [12]. Otitic dogs intensively shake their heads to relieve discomfort, irritation or itchiness as it is an effective way to clear the ear canal. Ear scratching might be due to the exacerbated pruritus and discomfort (Fernandez *et al.*, 2006) [13]. Carter and Chengappa (1991) [14] who reported that color of exudates indicates the microflora involved, the presence of yellow colour discharge suggests that there might be an involovement of bacteria in high number, and pain in otitis infection was due to the proteolytic enzymes secreted by bacteria and inflammatory cells derived lysozymes. *Malassezia pachydermatis* is the most common predominant organism contributing to otitis externa among all micotic organisms in dogs and *Staphylococcus spp.*, is the most predominant pathogen for causation of otitis externa among all bacterial organisms. Bacteria and yeast are present in low numbers in normal ears and are opportunistic species that replicate under favourable conditions created by another primary cause (Roshan *et al.*, 2018) [15]. Yamamoto (2010) [16] reported enrrofloxacin as the primary ideal choice of antibiotic in the treatment of otitis externa in dogs. We used Epiotic ear cleanser, there are numerous ear cleansers containing antibiotics or disinfectants with antibacterial activity. Ear cleansers containing a single or a combination of salicylic acid, chlorhexidine, EDTA-propylene glycol-based products are mostly used for topical ear cleaning in ear infections (Singh, 2016) [17].

The various drugs used in the treatment of present case is in agreement with Yamamoto (2010) [16] and Singh (2016) [17]. Epiotic ear cleanser contains salicylic acid (0.2%) that can clear the cerumen, wax and celluar debris. Cole *et al.* (2003) [18] reported that infected ears treated with an ear cleanser containing 0.1% salicylic acid were free of infection within 2 weeks this might be due to salicylic acid (0.2%) which acts by the removal of wax, bacterial toxins, degenerating cellular debris, and free fatty acid, all of which can act as a focus for infection and stimulate further inflammation. The ingredients of ear drops used in the present study (Ofloxacin 0.3%, Clotrimazole 1% and glucocorticoids) reduces the inflammation and pruritus and helps in inhibition of growth and multiplication of bacterial and fungal organisms (Jacobson, 2002) [19]. The rationale for immune-modulator therapy includes the stimulation of enhanced immune surveillance and altered response to bacterial allergens that leads to diminish recurrence (Ihrke, 2005) [20]. The immune-modulatory activity of the immune booster used in the present study might be due to the synergistic action of various ingredients (Vitamin C, vitamin D3, zinc).

5. Conclusion

Otitis externa in dogs is a common but frustrating condition for the vet to treat. However, treatment of the acute cases can be successful, but the decision to treat chronic cases should be made on an individual basis taking into consideration of client and animal compliance, the underlying cause and the severity of disease. All cases should undergo a thorough investigation of the ears and skin in an attempt to identify the underlying reasons for the otitis. The present case was diagnosed for a combined infection of *Malassezia* and *Staphylococcus* which was successfully treated with the combination of antifungal, antibiotics and other supportive drugs.

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