

Full Length Research Paper

## Early bite wounds in dogs in Ibadan, South-West Nigeria

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**A study was conducted in Ibadan, South-West Nigeria between 2005 and 2009 to determine the prevalence, risk factors and management protocols employed in early bite wounds in dogs. Review of case records, physical examinations and administration of structured questionnaire were used to obtain information with regard to the number of cases of early bite wounds presented, signalment, anatomical features, treatment modalities and response. Prevalence of early bite wounds was 11.73%. Sex, breed, anatomical features and management exhibited significant influence on the incidence of early bite wounds. Effectiveness of management protocols was low with significantly high recurrence rate. The results showed a significantly high association between early bite wounds and aural hematoma and otitis externa.**

**Key words:** Dog, ear, fly, bite wounds.

### INTRODUCTION

Diseases of the ear constitute an important part of small animal practice; they are a source of annoyance both to the animal and to the owner. Aural diseases do not as a rule cause death of the patient and, therefore, do not receive the attention they deserve.

The external ear in the dog consists of two skin-covered cartilages and is composed of the auricle or pinna which varies in size, shape and general conformation (Evans, 1993). The location of the ear flap makes it vulnerable to various insults of diverse nature, prominent among which is trauma (Cechner, 1990).

A significant proportion of the dog population in Nigeria is found in the southern subtropical region where insect activities are most pronounced and early bite wounds constitute a menace. Although, the ear of the dog is one of the least thought of in terms of infection, surveys of small animal practice have shown that the treatment of ear diseases, particularly otitis externa, accounted for more than 10% of professional time (Lane, 1982). Since

surgical intervention is the treatment of choice for canine aural diseases, a high incidence of post-operative complications had been attributed to pre-operative infection of aural structures (Stephenson, 1991; Rosey and Luttgen, 2000).

Reports of previous workers suggested that scratching, rubbing and head-shaking which are natural responses to aural irritation caused by early bite and other agents had facilitated the establishment of aural diseases with grave consequences (Dickson and Love, 1992; Rosey and Luttgen, 2000). Early bites in dogs is one of the factors attributed to the development of aural hematoma (Mastousek, 2004; Griffin, 1994; Jalil Falih, 2010).

Unpublished reports suggest that 4 out of every 10 dogs in Ibadan, the location of the present study, have early bite wounds. To the best of our knowledge, studies have not been published to report the prevalence, risk factors and management of early bite wounds in dogs. These are the objectives which this study sought to

**Table 1.** Incidence of early bite wounds in dogs.

Clinic	Number of cases presented at the clinic	Number of cases with early bite wound	Prevalence (%)
Clinic A	203	39	2.93
Clinic B	210	17	1.19
Clinic C	155	27	1.88
Clinic D	138	16	1.12
Clinic E	315	20	1.40
Clinic F	180	15	1.05
Clinic G	222	34	2.37
Total	1432	168	11.73

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## MATERIALS AND METHODS

Case records from some selected private and public veterinary clinics and hospitals were reviewed between 2005 and 2009 to determine the number of cases in dogs presented with early bite wounds, treatment modalities employed and the response.

Another parallel study was also conducted during the same period with the administration of structured questionnaire to resident clinicians drawn from the same clinics and hospitals. The questionnaire sought to obtain information specifically on the description of each dog presented with early bite wound with reference to anatomic features such as the hair coat color, shape of the ear, location of ear wound on the pinna, color of the head and ears. Information was also sought with respect to management protocols employed and response to treatment. Access to information being sought was facilitated by the need for owners of dogs with early bite wounds to make repeated visits to the clinic during the course of the disease. We were able to obtain the relevant information and carry out physical examination during one or more of the visits.

Data obtained from case records, physical examinations and response to questionnaire were collated and subjected to statistical analysis. The distribution of the cases of bite wounds based on the parameters assessed was expressed as percentages of the total cases presented in the period under review.

## RESULTS AND DISCUSSION

A total of 1,432 cases were attended to at the various clinics during the four year period under review. Out of these, 168 cases of early bite wounds were reported with a total incidence of 11.73% (Table 1).

The distribution of breed, age, sex and management methods employed in dogs with early bite wounds are shown in Figures 1, 2, 3 and 4, respectively. Sex, breed and management methods had significant influence on the incidence of early bite wounds. The incidence of early bite wound was the highest in dogs between 1 and 2 years of age, but decreased with increasing age. Incidence was significantly higher in Alsatian breed than other breeds. Male dogs had significantly higher incidence of early bite wounds than females. Dogs managed intensively had higher percentage incidence of early bite

wounds than those managed extensively.

The distributions of shape of the ear, location of wound on the ear and occurrence of associated ear infection with early bite wound are summarized in Figures 5, 6, 7 and 8, respectively. Incidence of early bite wound was the highest in dogs with large floppy ears. Neither convexity nor concavity of the ear influenced the location of bite wounds. Aural hematoma and otitis externa were found in association with 54% of dogs presented with early bite wounds. The treatment protocol employed in the management of early bite wounds and response is presented in Table 2. Response to management was successful without recurrence in 61 cases (36.31%), while recurrence occurred in 107 cases (63.69%).

The veterinary clinics covered in this study were carefully selected based on their relatively heavy case loads and adequacy of medical record documentation. Of the 1,432 cases presented during the period of investigation, 168 (11.73%) were treated for early bite wounds. German Shepherd breed was the most represented (56%), followed by Mongrel (24%), Rottweiler (16%), while other breeds had less than 4% representation. This finding did not represent the true incidence of early bite wounds in these breeds, but rather, owners' preference for the breeds and also a reflection of the locality in which the study was conducted. There was an inverse relationship between age and incidence of early bite wounds. Incidence was highest in dogs between 1 and 2 years age bracket. The decrease in incidence with age might be ascribed to increasing toughness of cutaneous tissue with age and/or increased resistance to bite due to the scars formed from previous bite wounds.

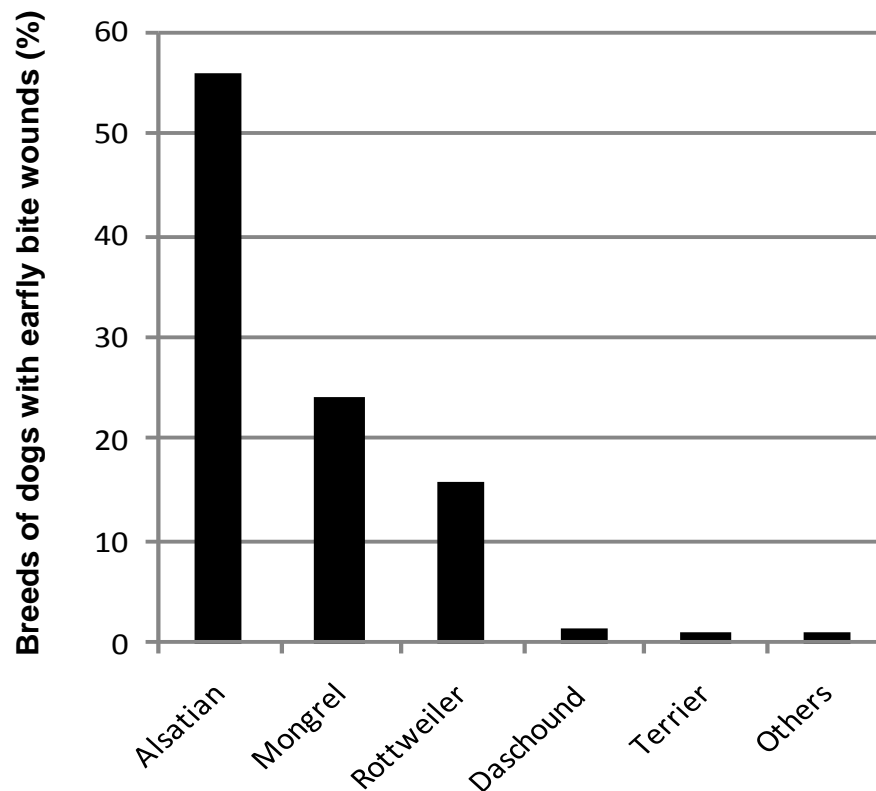
The observed significantly higher incidence in males than females might be as a result of disproportionate representation rather than any other sexually related factor. However, in the area of study, where most dogs were kept in confinement in none-fly proof, unkempt kennels, incidence was higher when compared with animals with free movement. This illustrates the probable role of environmental hygiene as a factor in the etio-pathogenesis of early bite wound in dogs.

Hair coat color seemed to influence the incidence of early bite wounds in this study. Dogs with dark hair coat

**Table 2.** Response to treatment protocol employed in the management of early bite wounds in dogs.

S/N	Treatment regime	Number and percentage (%) of cases managed	Response	
			Positive	Recurrence
1	Wound healing oil only	24 (14.28)	5 (20.83)	19 (79.17)
2	Antibiotic wound spray only	32 (19.04)	6 (18.75)	26 (81.25)
3	Fly repellent ointment only	23 (13.69)	8 (34.78)	15 (65.22)
4	Healing-oil + fly repellent	37 (22.02)	18 (48.64)	19 (51.36)
5	Healing oil + antibiotics	29 (17.26)	12 (41.37)	17 (58.63)
6	Healing-oil + antibiotics + fly repellent	12 (7.20)	8 (66.66)	4 (33.34)
7	Sulphur ointment	1 (0.60)	0 (0.00)	1 (100.00)
8	Healing oil + antiparasitic (Amitrax) bath	10 (5.95)	4 (40.00)	6 (60.00)
-	Total	168 (100)	61 (36.31)	107 (63.69)

\*Percentages in parentheses.

**Figure 1.** Breed distribution of dogs with early bite wounds.

seemed to be more predisposed to early bite wound than those with light-colored hair coat. This might be related to the preponderance of dogs with dark hair coat among the cases presented rather than anatomical predisposition.

The shape of the ear also appeared to play a significant role in the incidence of early bite wounds in the dogs investigated. Dogs with large floppy ears had higher incidence than those with erect ears. Convexity or concavity of the ear did not influence the location of bite wounds. The exact role of cutaneous architecture and

spatial distribution of hair follicles as factors in the etio-pathogenesis of early bite wounds is presently not clear and needs further investigation.

We observed a close association between early bite wound and other ear infections. Otitis externa and aural hematoma co-existed in 33 and 18% of cases with early bite wounds, respectively. The reason for this might be ascribed to severe scratching, head shaking and irritation that normally attend bite wounds. The skin covering the concave surface of the ear flap is more firmly attached to

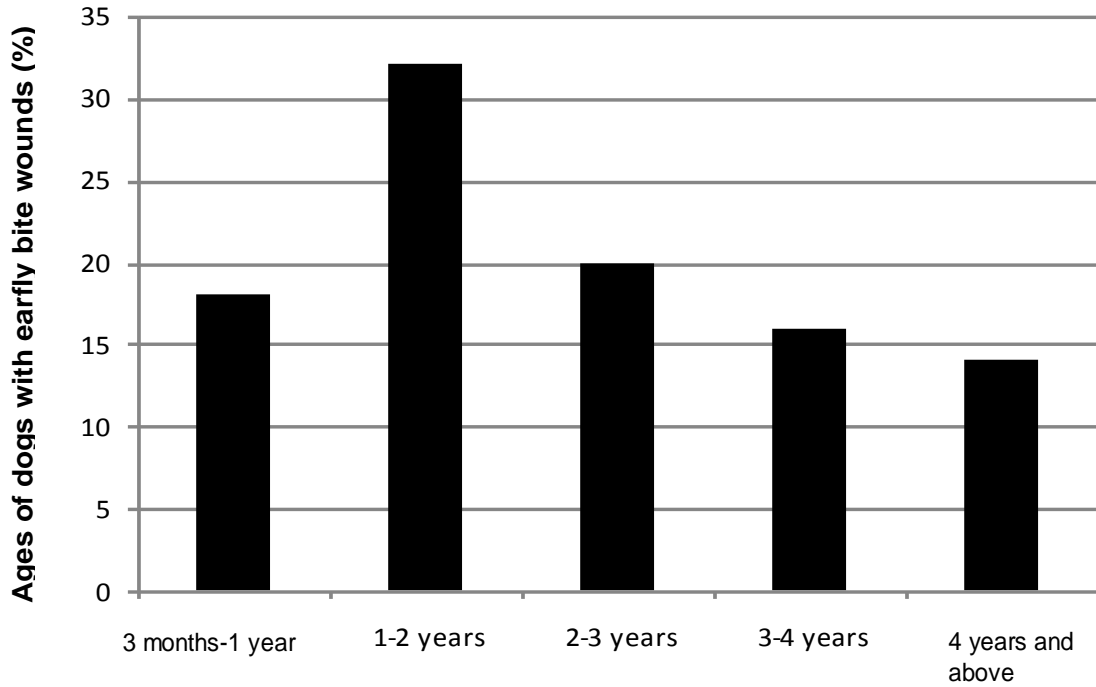


Figure 2. Age distribution of dogs with early bite wounds.

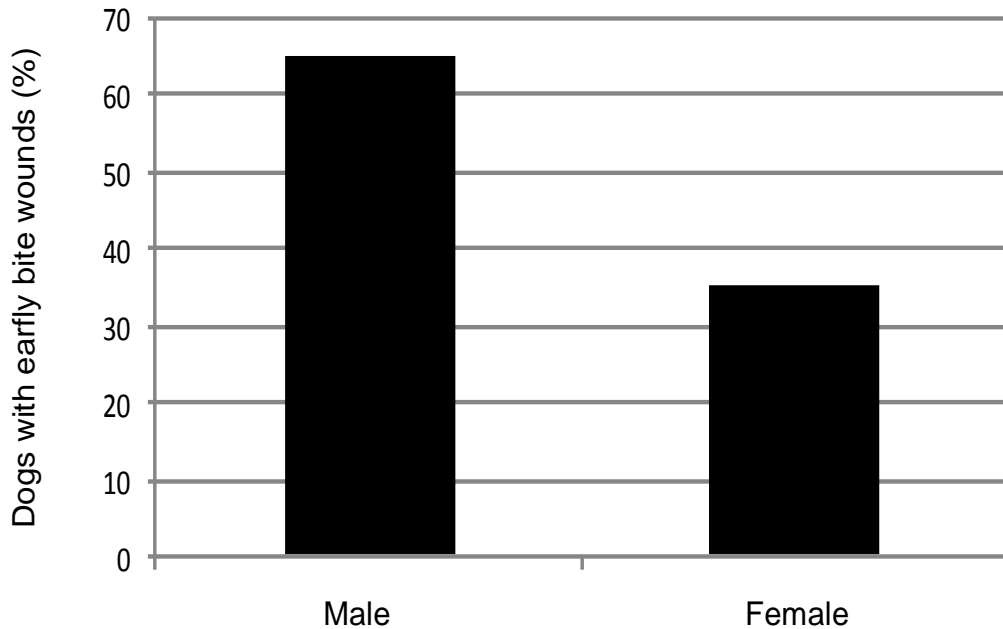


Figure 3. Sex distribution of dogs with early bite wounds.

the auricular cartilage. When injured by scratching or rubbing, small blood vessels between the skin and cartilage are ruptured and a hematoma may result. We presume that an association may exist between isolated

pathogens from ear bite wound and other ear infections, especially otitis externa. This is, however, a subject for future investigation. The effectiveness of the management protocol for early bite wound may be considered

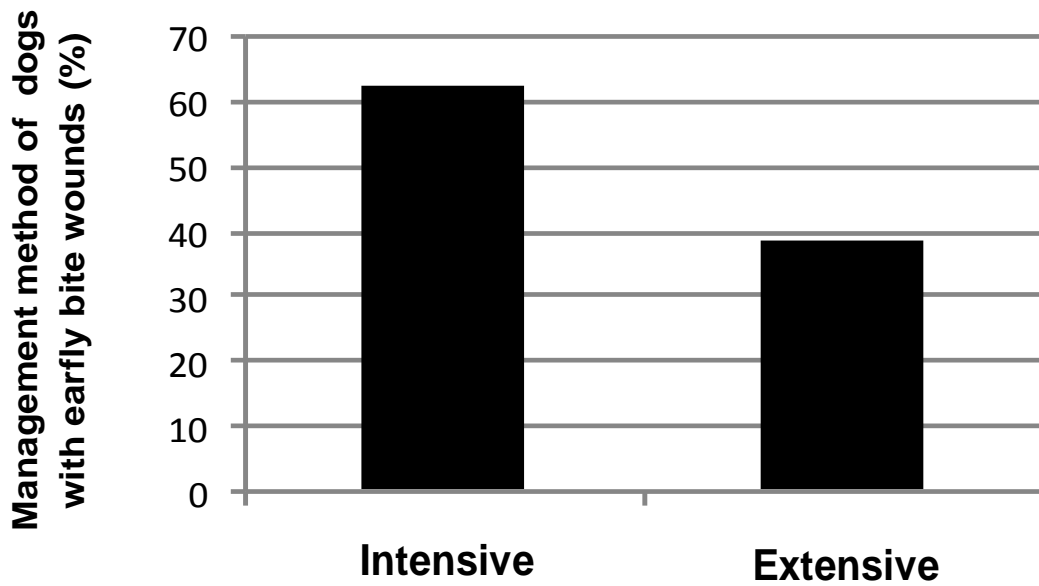


Figure 4. Percent distribution of management method of dogs with early bite wounds.

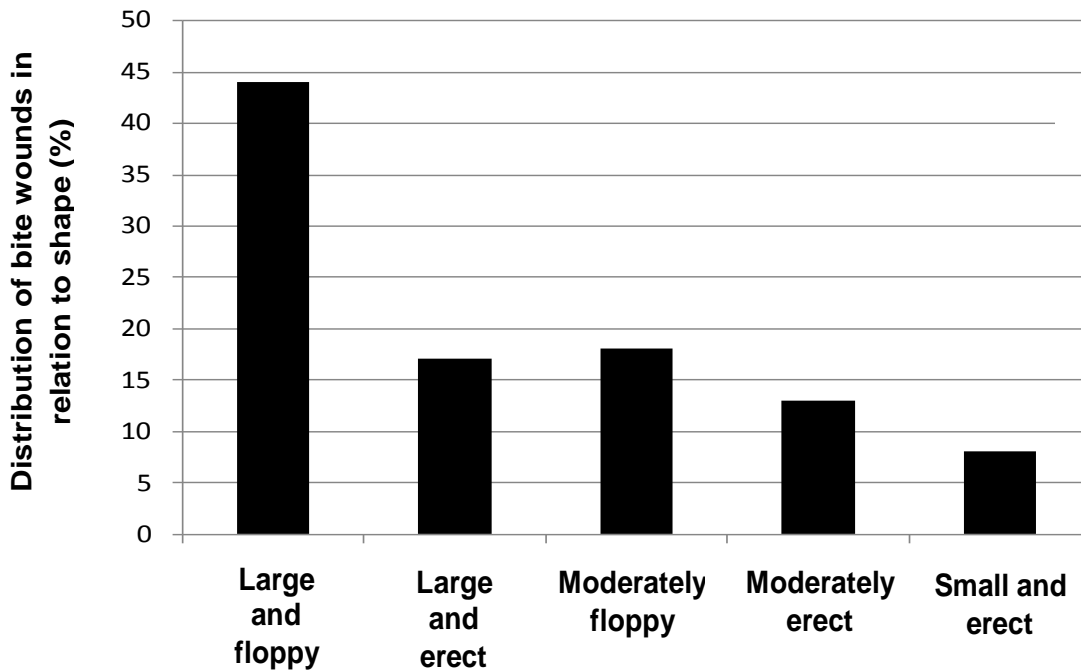


Figure 5. Percent distribution of shape of ear of dogs with early bite wounds.

as low in all the clinics covered by this study. Majority of the treatment regimes employed in the medical management of early bite wound resulted in high rate of recurrence. This further confirms observations from previous workers with regard to the futility and frustrating

nature of treatment of early wounds in dogs (Stephenson, 1991; Rosey and Lutten, 2000; Dickson and Love, 1991). However, treatment protocol that incorporated a combination of an antibiotic, healing oil and fly repellent had the least rate of recurrence. Early bite

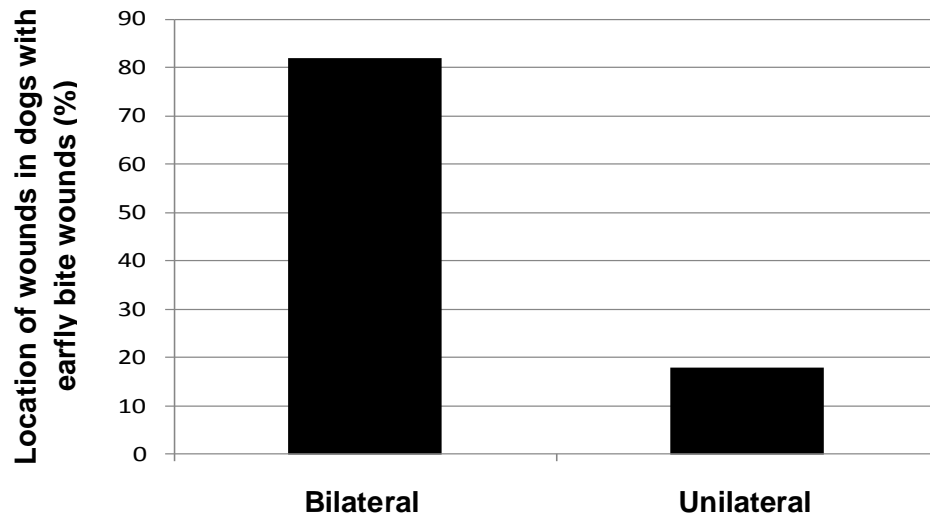


Figure 6. Percent distribution of location of bite wounds.

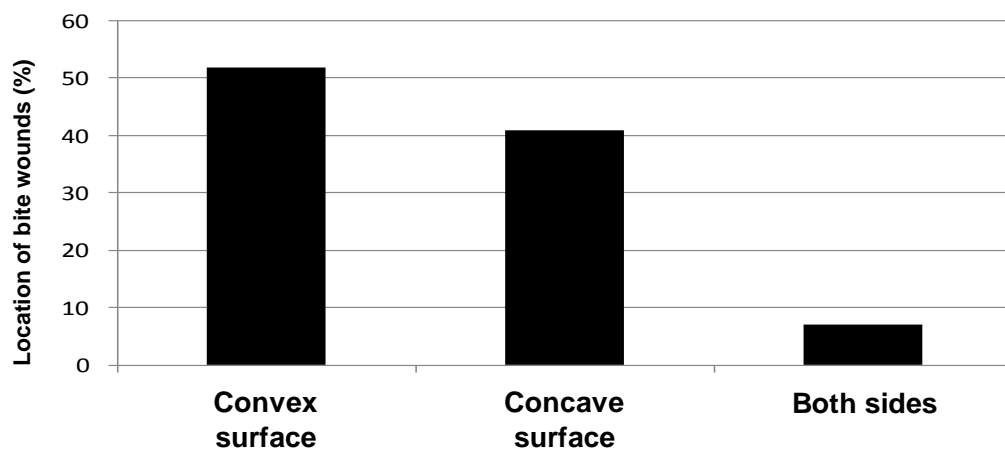


Figure 7. Location of bite wounds in relation to surface of ear affected.

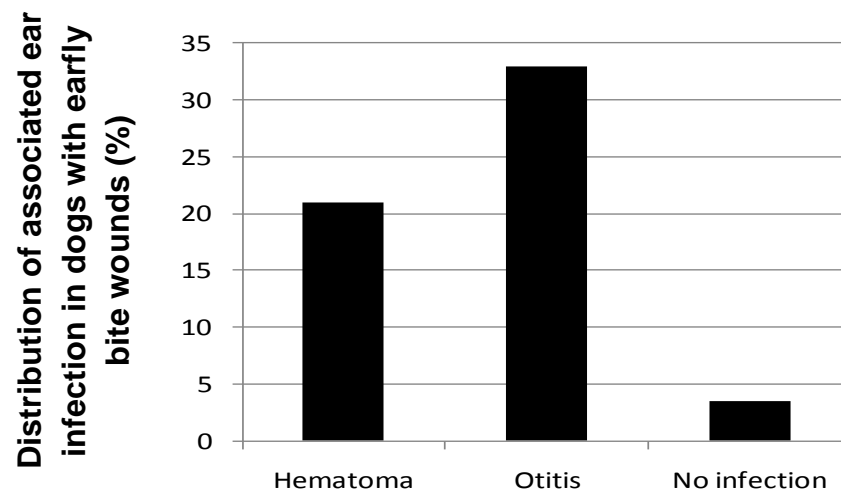


Figure 8. Early bite wounds and associated ear infection.

wound constitute a source of annoyance both to the dog and to the owner. It also poses a therapeutic challenge to the clinician. Efforts at preventing fly bite should be accorded greater attention than hitherto.

#### REFERENCES

- Cechner PE (1990). The pinna. In: Current Techniques in Small Animal Surgery. W.B. Saunders. Philadelphia. pp. 95-97.
- Dickson J, Love H (1992). Medical treatment of canine aural diseases. Proceedings of XXXV Congress of the British Small Animal Veterinary Association.
- Evans HE (1993). The ear. In Evans H.E. edition. Anatomy of the Dog. W.B. Saunders, Philadelphia, pp. 988-1008.
- Griffin C (1994). Pinnal diseases. Vet Clin North am small animal practice 24(5): 897-904.
- Lane G (1986). Canine aural Surgery. In Practice – Small Clinic. 16: 34-39.
- Mastousek JL (2004). Diseases of the ear pinna. Veterinary Clinic North American Small Animal Practice, 34(2) 511-540.
- Mohsin Abdul Jalil Faliq (2010) Surgical treatment of ear haematoma in dogs Bas. J. Vet. Res. 9(1): 65-70.
- Rosey C, Luttgen RA (2000). Diseases of the ear. In: Ettinger SJ Feldman EC, edition. Textbook of Veterinary Internal Medicine. Philadelphia W.B. Saunders, pp. 986-1002.
- Stephenson TK (1991). Some diseases of the ear of dogs. J. Am. Vet Med. Assoc. 98:138-142.