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ORIGINAL ARTICLE

Frequency and prevalence of clinical conditions and therapeutic drugs used in dog and cat at Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University

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ABSTRACT

Objective: This study was carried out to determine the frequency and prevalence of clinical conditions and their treatment, especially antibiotics in dogs and cats.

Materials and Methods: A period of 12-month retrospective study was conducted at the Teaching Veterinary Hospital, Chattogram Veterinary and Animal Sciences University, Chittagong, Bangladesh from July 2018 to June 2019. A total of 849 cases, including 488(57.5%) and 361 (42.5%) dogs and cats respectively, were in account to espy the clinical conditions. Season, age, sex, and breed were the parameters to analyze the prevalence of those clinical conditions.

Results: From the study, it was found that the endoparasitic infestation was highly frequent in both dog and cat (55% in dogs and 59% in cats). The endoparasitic infestation was highly prevalent in cats (91.53%) significantly (p = 0.003), which were ≤1 year of age. On the other hand, the ectoparasitic infestation was found prevalent significantly (p = 0.06) in the winter than any season and dewormed dogs (p = 0.03). Prevalence of canine parvovirus infection in dogs and wound in cats were substantially higher (p < 0.001 and p=0.05 respectively) in the winter whereas the prevalence of myiasis in dogs was prominent in the rainy season significantly (p = 0.01). The mostly used antibiotic was ceftriaxone (9.5% in dogs and 4% in cats).

Conclusion: Different endoparasitic, ectoparasitic, and infectious diseases found prone to infect pet animals, mainly dogs, and cats. By maintaining proper anthelmintics and vaccine shots may act as a prevention procedure to those infections.

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KEYWORDS

Antibiotic; cat; clinical conditions; dog; prevalence

Introduction

Pet animals, especially dogs, and cats are crucial elements of life for many people all over the world as well as in Bangladesh. They treated as a whole part of the family and mostly considered to be an extended family [1]. Pet animals play an important role in society, such as the development of children physically, mentally, and socially [2]. In many countries, parents who have no child nursed pet animals as their child [3]. Dogs and cats help the well being of their owner to get play and exercise, help each other to compete with stress where psychological symbiosis occurs between them. They act as natural ambassadors who help to reduce blood pressure and other cardiovascular diseases of people [4]. Dogs and cats also play different roles, such as guiding, assisting, and espy to the blind, disabled person, and defense section of the country [5]. However, in spite of the advantages, there are some disadvantages to rearing pet animals. Pet animals living with humans are responsible for spreading zoonotic diseases if proper housing, deworming, and vaccination not done [6]. They become public health hazards, if not treated well for infectious diseases [7]. A survey said that about 1415 human pathogens are available, in which 61% are zoonotic [8]. About 50% of humans' infectious diseases are emerging,

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and about 75% of these emerging infectious diseases are zoonotic. A few studies were conducted to determine the prevalence of clinical conditions and diseases in dogs and cats. However, no comprehensive research has been conducted yet to determine the use of drugs, mainly antibiotics in these clinical conditions in dogs and cats. Therefore, the present study was attempted to determine the frequency and prevalence of clinical conditions and therapeutic drugs used in these conditions, especially antibiotics in dogs and cats.

Materials and Methods

A retrospective study was carried out at Teaching Veterinary Hospital (TVH) from July 2018 to June 2019 at Chattogram Veterinary and Animal Science University (CVASU), Chattogram, Bangladesh. A total of 849 sick pet animals, especially dogs and cats were registered in the hospital. The ethical approval number is CVASU/Dir(R&E) EC/2019/126(4). Examination of the registered diseased animal was performed on the basis of Complaints of the owner, Clinical history, and clinical signs shown by the patients. Detailed clinical examination was noted in-hospital case sheet, and later it was converted into an excel sheet-2007.

Complaints of the owner

Owner's Complaints were recorded in case of the sheet when the animal was clinically examined [5].

Anamnesis/ Clinical history

The clinical history of diseases was also collected from owners and recorded in the case sheet though it is important for causal factors of diseases [5]. *Physical examination of the patient* Both distant and close inspection, palpation, percussion, and auscultation procedure followed through the standard procedure [9].

Clinical examination

Through a clinical examination of the patients, including respiration rate, heart rate, pulse rate, temperature, body condition score, skin condition, etc. were determined using clinical examination tools. Needle aspiration performed where needed, and wounds were classified accordingly by restraining the patients [9].

Laboratory diagnosis

Fecal samples were examined grossly by observing their color, odor, consistency, and frequency of defecation besides both direct and floatation methods were done to prove the fecal parasitic presence maintaining standard laboratory procedure [10,11].On the other hand availability of mites was confirmed by the skin scrapping method using previously published articles [12]. Blood samples were procured further to estimate nutritional deficiency.

Statistical analysis

All collected data were pasted in the MS Excel spreadsheet (Microsoft office excel-2007, USA) and coded as required. Data analysis performed through STRATA-IC13. Both the *t*-test and chi-square tests were done with a 5% level of significance.

Results and Discussion

Grossly 849 cases, including 488 dogs and 361 cats, included ascertaining disease prevalence and their treatment provided in TVH of CVASU from 1 July 2018 to 30 June 2019. All the details of the results are provided in Figures 1–4 and Tables 1–5.

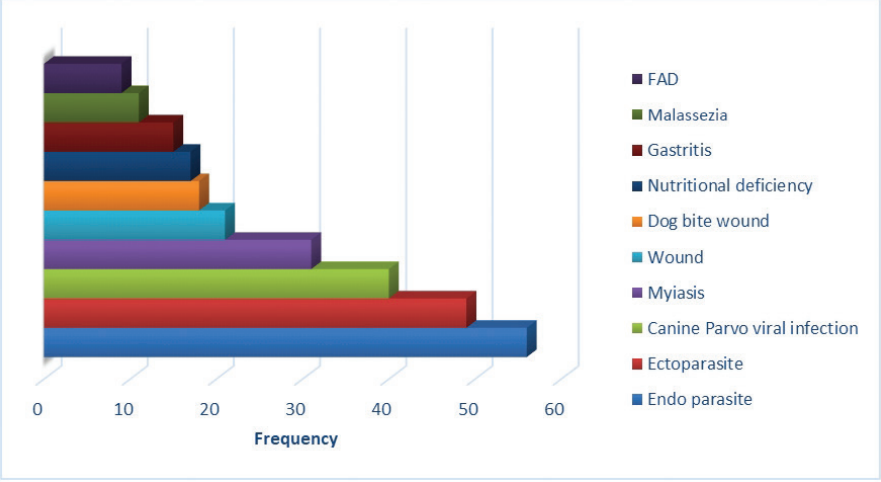

Figure 1. Frequency of the most common clinical conditions among dogs visited the Teaching Veterinary Hospital during the study period.

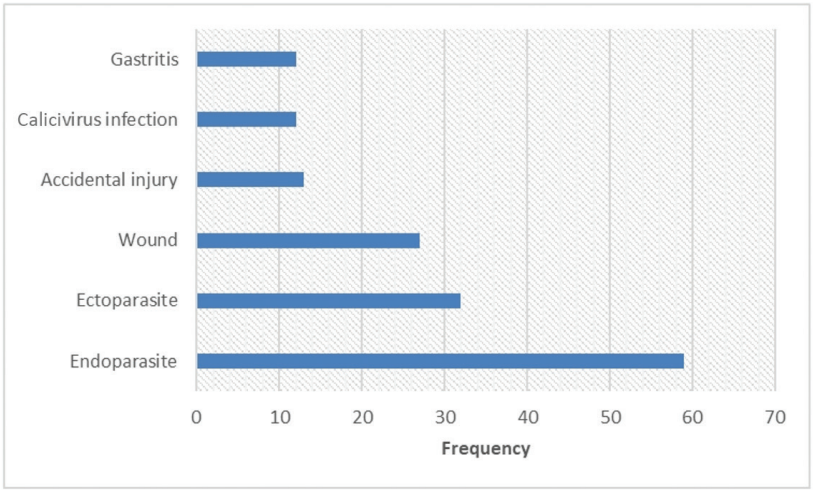

Figure 2. Frequency of the most common clinical conditions among cats visited the Teaching Veterinary Hospital during the study period.

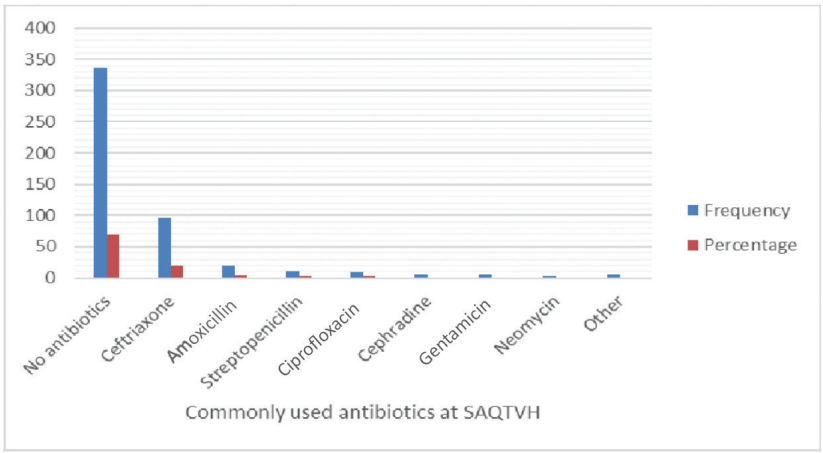

Figure 3. Use of antibiotics against different clinical conditions of dogs at the Teaching Veterinary Hospital during the study period.

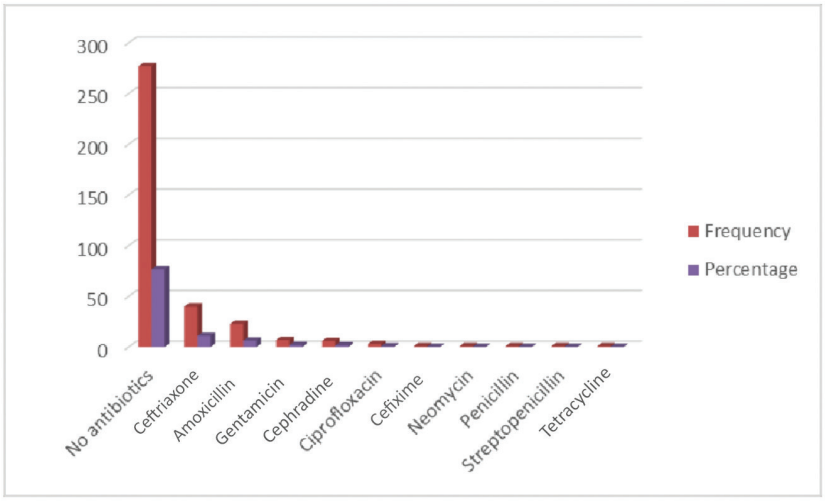

Figure 4. Use of antibiotics against different clinical conditions of cats at the Teaching Veterinary Hospital during the study period.

Table 1. Prevalence of endoparasitic infestation according to different variables.

Species	Variable	Category	Observation	Number positive (%)	*p* value
Dog	Season	Rainy	151	15 (9.93)	0.71
		Summer	108	12 (11.11)	
		Winter	229	29 (12.66)	
	Breed	E	287	30 (10.45)	0.37
		L	200	26 (13)	
	Age (year)	≤1	286	31 (10.84)	0.31
		>1–2	95	15 (15.79)	
		>2	107	10 (9.35)	
	Sex	Female	179	20 (11.17)	0.87
		Male	309	36 (11.65)	
	Deworming	No	334	41 (12.28)	0.41
		Yes	154	15 (9.74)	
Cat	Season	Rainy	116	24 (40.68)	0.09
		Summer	102	16 (27.12)	
		Winter	143	37 (16.16)	
	Breed	E	172	33 (55.93)	0.16
		L	189	26 (44.07)	
	Age (year)	≤1	266	54 (91.53)	0.003*
		>1–2	65	4 (6.78)	
		>2	30	1 (1.69)	
	Sex	Female	149	29 (49.15)	0.17
		Male	212	30 (50.4)	

*Statistically significant.

Table 2. Prevalence of ectoparasitic infestation according to different variables.

Species	Variable	Category	Observation	Number positive (%)	*p* value
Dog	Season	Rainy	151	8 (5.30)	0.06*
		Summer	108	13 (12.04)	
		Winter	229	28 (12.23)	
	Breed	E	287	26 (9.06)	0.37
		L	200	23 (11.50)	
	Age (year)	≤1	286	31 (10.84)	0.61
		>1–2	95	7 (7.37)	
		>2	107	11 (10.28)	
	Sex	Female	179	15 (8.38)	0.35
		Male	309	34 (11)	
	Deworming	No	334	27 (8.08)	0.03*
		Yes	154	22 (14.29)	
Cat	Season	Rainy	116	5 (15.63)	0.11
		Summer	102	11 (34.38)	
		Winter	143	16 (50)	
	Breed	E	172	13 (40.63)	0.40
		L	189	19 (59.38)	

(Continued)

Species	Variable	Category	Observation	Number positive (%)	*p* value
	Age (year)	≤1	266	19 (59.38)	0.15
		>1–2	65	9 (28.13)	
		>2	30	4 (12.50)	
	Sex	Female	149	12 (37.50)	0.65
		Male	212	20 (62.50)	

*Statistically significant.

Table 3. Prevalence of CPV according to different variables.

Variable	Category	Observation	Number positive (%)	*p* value
Season	Rainy	151	0 (0)	<0.001*
	Summer	108	3 (2.78)	
	Winter	229	37 (16.16)	
Breed	E	287	23 (8.01)	0.86
	L	200	17 (8.50)	
Age (year)	≤1	286	25 (8.74)	0.50
	>1–2	95	5 (5.26)	
	>2	107	10 (9.35)	
Sex	Female	179	15 (8.38)	0.91
	Male	309	25 (8.05)	

*Statistically significant.

Table 4. Prevalence of Myiasis according to different variables.

Variable	Category	Observation	Number positive (%)	*p* value
Season	Rainy	151	17 (11.26)	0.01*
	Summer	108	4 (3.70)	
	Winter	229	10 (4.37)	
Breed	E	287	21 (7.32)	0.30
	L	200	10 (5)	
Age (year)	≤1	286	20 (6.99)	0.70
	>1–2	95	6 (6.32)	
	>2	107	5 (4.67)	
Sex	Female	179	15 (8.38)	0.16
	Male	309	16 (5.18)	
Deworming	No	334	23 (6.89)	0.47
	Yes	154	8 (5.19)	

*Statistically significant.

Frequency of diseases

The frequency and percentage of the most common dogs and cats diseases registered at TVH during the study period are shown in Figures 1 and 2. Among all, the frequency of endoparasitic infestation such as *Dipylidium caninum, Taenia* spp, *Toxocara canis*, *Ancylostoma caninum*, *T. cati*, *A.tubaeforme* had been found higher in both animals (Dog 55% and cat 59%) compared to ectoparasitic infestations such as lice, flea, tick, mite, fly (dogs 48% and cats 32%). On the contrary, another study showed a higher prevalence of ectoparasitic diseases in comparison to endoparasite [1]. However, the frequency of endoparasitic and ectoparasitic infestation in both dogs and cats had been shown higher than any other clinical condition. These findings are related to the study of another researcher who recorded the highest prevalence of parasitic diseases (15.74%)

Table 5. Prevalence of wound in cats according to different variables.

Variable	Category	Observation	Number positive (%)	*p* value
Season	Rainy	116	14 (51.85)	0.05*
	Summer	102	4 (14.81)	
	Winter	143	9 (33.33)	
Breed	E	172	14 (51.85)	0.64
	L	189	13 (48.15)	
Age (year)	≤1	266	17 (62.96)	0.32
	>1–2	65	6 (22.22)	
	>2	30	4 (14.81)	
Sex	Female	149	7 (25.93)	0.09
	Male	212	20 (74.07)	

*Statistically significant.

during his study period [1]. Rearing more pet animals in the urban locality may act as a risk factor for this regard. Another study reports, dogs and cats' clinical diseases were 75% and 25%, but parasitic infections were 14.77% and 13.33%, respectively [13]. In the city area, dogs were primarily affected by endoparasites in comparison with urban places due to overpopulation and fecal cross-contamination. The frequency of affected dogs with ectoparasite, canine parvoviral infection, myiasis, wound, dog bite, nutritional deficiency, gastritis, Malassezia infection, and FAD were 48%, 39%, 30%, 20%, 17%, 16%, 14%, 10% and 8% respectively (Fig. 1). In the case of cats, frequency of occurring gastritis, calci virus infection, accidental injury, wound and ectoparasitic infestation was 12%, 12%, 13%, 27%, and 32%, respectively (Fig. 2).

Prevalence of parasitic infestation according to variables

Prevalence of endoparasitic infestation was recorded according to season, breed, age, sex, and deworming history. In the case of cats, 91.53% of cats of ≤1 year of age were found to be infested with endoparasite, which is significantly higher ($p = 0.003$). There was no significant association between season and parasitic disease in both animals.

On the other hand, Seasonal variation showed a great impact on the ectoparasitic infestation. The occurrence of infestation was significantly higher ($p = 0.06$) in the winter (12.23%) than in the summer (12.04%) and the rainy season (5.30%) in dogs. This finding is supported by another study in which reported a higher prevalence of ectoparasite in the winter (5.9%) with significant *p*-value ($p \leq 0.05$) [1]. This is due to rearing dogs with long hair coats in the winter season to protect them from the cold by the pet owners, which enhances the prevalence of ectoparasitic diseases. Infestation in dewormed dogs (14.29%) showed higher significance ($p = 0.03$) than non-dewormed dogs (8.08%). This may be caused by not maintaining the repeat course of deworming after 14 days. On the other hand, in another study, the prevalence of the parasitic disease in pet animals found lower due to owners' awareness of pet management [14]. However, no significance has been found with variables including season, breed, age, or sex in cats.

Prevalence of other clinical conditions

Canine Parvoviral infection in the dog

In this study, no dogs were noticed to be infected with CPV (0%) in the rainy season, which differs significantly ($p < 0.001$) from the summer (2.78%), mostly in the winter (16.16%) season which was diagnosed based on clinical sign symptoms. The findings of this study disagree with Islam et al. [14], where CPV prevalence was 30% in the warm season in Mymensingh [15,16]. Susceptibility to diseases according to breed was not found significant, whereas another study showed that certain exotic breeds are more prone to have severe CPV [17]. Though, reasons for breed susceptibility were unclear. About 8.74% of dogs of ≤1 year found to be infected with parvovirus infection, where only 5.26% of dogs of >1–2 years were infected. Both males (8.05%) and female dogs (8.38%) were equally affected. Another study showed that CPV was more prone to affect young animals than an adult, and it was 28% (1–6 months), 16.66% (7–12 months), and 11.11% (18 months) prevalent respectively in different age and affects mainly male animals [18].

Myiasis in dog

The occurrence of myiasis was significantly high ($p = 0.01$) in the rainy time (11.26%) than the summer (3.70%) and the winter (4.37%). As the fly population rises during the rainy season, larval infestation also increases. Also wound area remains wet in the rainy season and takes a long time to heal; as a result, fly gets attracted, and thus

myiasis occurs. Larval infestation observed more commonly in female dogs (8.38%) than males (5.18%) and non-dewormed dogs (6.89%) than dewormed (5.19%). Another study reported that the prevalence of myiasis was 11.05% in dogs whereas3.49% in males and 2.91% in females. They reported that the prevalence of 2.26% in cats whereas 1.50% in males and 0.75% in females, which is not coordinate with our study [5].

Wound in cat

According to Madoff, When cats were targeted by other animals, in 95% cases, the dog is the main cause, but infection incidence rate in cat bites is higher (50%) than dog bites (10% to 15%) [15]. In this study, about 51.85% of cats found to be infected with a wound in the rainy season than the summer (14.81%) and the winter (33.33%), which is significantly higher ($p = 0.05$). During the rainy season, floors and roads become slippery, so the risk of occurring accidental wound increases than other seasons. No significant difference was seen in the breed and age group of cats. However, slightly increased infection was seen in males (74.07%) than females (25.93%). Male cats, especially which are not neutered are more likely to become infected with wound than female during fights. Because unneutered cats are territorial, they always defend an area around their home but the desire for more territory; they continually try to expand the borders of their territory and the need to keep intruders out of their existing territory means that they are always fighting with other cats and thus increase the rate of wound infection. Also, male cats have a bitter and vicious fight habit than the female when breeding season comes, which sometimes have severe consequences for counterpart.

Use of antibiotics in different clinical conditions

In both dogs and cats, maximum patients were treated without using any antibiotics (around 34%in dogs and 27% in cats). In this study, every patient who was treated with antibiotics was followed until the complete recovery of animals. As most of the dogs and cats were presented with a parasitic infestation (Figs. 1 and 2), only deworming resulted in curing the patients. Among all antibiotics, mostly used antibiotic was ceftriaxone (dogs 9.5% and cats 4%). As wound occurred most commonly after parasitic infestation in cats (27%) (Fig. 2) and around 20% in dogs, the most commonly used antibiotic was ceftriaxone. Another researcher reported that, in the case of moderate-to-severe wound infections, antibiotic ceftriaxone could be chosen. Moreover, ceftriaxone is the drug of choice for its easy administration, less ache with a price [18]. Frequency of using other antibiotics in dogs were amoxicillin 2%, strepto-penicillin 1%, ciprofloxacin 1%, cephradine 0.5%, gentamycin 0.5%, neomycin 0.2% and others 0.5%. In case of cats, amoxicillin 2%, gentamycin 1%, cephradine 0.8%, ciprofloxacin 0.5%, cefixime 0.5%, neomycin 0.2%, penicillin0.2%, strepto-penicillin 0.2%, tetracycline 0.2% were used. One study reported that the most frequently prescribed antibiotics were Amoxicillin-clavulanate [19].

Conclusion

The result of this study has given a complete scenario of clinical conditions and diseases of dogs and cats that brought to the TVH regularly during the study period. High parasitic infestation may alert the veterinarians as well as the pet owners about deworming regularly. Knowledge about different clinical conditions, including wound, myiasis, and parvovirus infection associated with their driving factors such as season, age, breed, sex can facilitate to take necessary measures against these clinical causes. Additionally, ideas about drugs, especially antibiotics, would help to choose proper antibiotics in clinical conditions in future studies.

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Conflict of interests

The authors declared that they have no conflict of interest.

Authors' contribution

F.M. Yasir Hasib and Md. Hossain Kabir collected the data from the animal owner and noted in the case sheet. They also followed the patient up to complete recovery. Shanta Barua transferred the data into excel-2007. SharminAkter completed the total paper writing and corrected the paper after review. Sharmin Chowdhury helped in data analysis and interpretation.

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