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Prevalence of diseases of pigeons and responses to treatment of bacterial disease

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Abstract

The prevalence of diseases of pigeon and response to treatment of bacterial disease were studied. One thousand pigeons were collected and examined to diagnose diseases following clinical history and signs, post-mortem lesions and laboratory examination. The overall prevalence of pigeon diseases was 21.9% (n = 219). Parasitic infestation was significantly (P<0.01) higher (30%) followed by bacterial (22.3%), viral (18.9%) nutritional and others (16.3%) and fungal (14.3%). Disease prevalence was higher in female than in male, and higher in birds of 2 to 6-months old than in older or younger birds. The prevalence of diseases was higher (P<0.01) in winter (34%) than summer (16.7%) and rainy (14.3%) seasons. Pigeons of extensive rearing system showed more (23.0%) infection than in intensive (19.7%) system. Prevalence was significantly (P<0.01) higher (25.2%) in non-vaccinated pigeons than vaccinated (17%) pigeons. Treatment with Oxytetracycline hydrochloride (Tetravet-200 WSP), Sulphaclozine Sodium Monohydrate (SCZ WSP) and Doxycycline (DOXY-A VET) were effective against bacterial diseases. It is suggested that scientific management, bio-security and therapeutic measures against infectious diseases are required to combat the maladies in pigeon. (*Bangl. vet*. 2020. Vol. 37, No. 1 - 2, 21 – 26)

Introduction

Pigeons are reared as backyard poultry and considered as an alternative to chicken and quail meat. Domestic pigeons (*Columba liviadomestica*) live with humans in every place around the earth. Pigeons frequently contaminate surroundings with their faeces. Pigeons are used as pets, cultural and religious symbols (Sari *et al.,* 2008). They act as important hosts in spreading diseases in humans and animals (Toro *et al.,* 1999). Several health problems can affect their growth and performance, including parasitic infestations. In Bangladesh, pigeons have been reared for meat for many years. Pigeon farming can be a hobby, and can be profitable. There is a lot of demand for squab meat in the market due to its delicacy and taste (Asaduzzaman *et al.,* 2012). Pigeon rearing could reduce the unemployment in Bangladesh. Therefore, the study was carried out to investigate the diseases, which commonly affect pigeons and the effectiveness of different commercial drugs against bacterial diseases of pigeons.

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Materials and Methods

Study area and housing

The study was carried out at Saidpur Upazila (sub-district) livestock office, Nilphamari district and in nearby farms from January to December 2019. Most pigeons lived by scavenging, and rest were maintained with commercial feed containing crushed corn, wheat, black pea, mustard and Japanese millet.

Diagnosis of pigeon diseases

The diseases were diagnosed by clinical history, post-mortem examination and laboratory test. A pretested questionnaire was developed for data collection. Physical examination of birds was done when attending the Veterinary Hospital as out-patients. Breed, age, sex, feeding, housing system and vaccination status were recorded. Data on diagnostic and therapeutic protocol were collected.

Prevalence was calculated as number of cases of disease divided by population at risk multiplied by 100.

Experimental bird and data collection

Pigeons were presented as outpatients at the Upazila Livestock Office and Veterinary Hospital, Saidpur or visited on nearby farms. One thousand pigeons were presented, and 45 with bacterial infection were treated. Treated pigeons were put into three groups of 15 birds. Group A was treated with Sulphaclozine Sodium Monohydrate (SCZ WSP) orally (10 gm Sulphaclozine Sodium (Monohydrate) INN 3 gm, The ACME Laboratories, Veterinary Division, Dhamrai, Dhaka, Bangladesh). Group B was treated with Oxytetracycline (Tetravet-200 WSP) orally (Each gram containing Oxytetracycline BP 200 mg, ACME, Bangladesh) and Group C was treated with Doxycycline (DOXY-A VET) orally, each gram of powder containing Doxycycline USP 100 mg (as doxycycline hydrate), ACME.

Statistical analysis

All collected data were put into Microsoft Excel program to calculate prevalence. Data were analysed by Chi-square (χ^2) test using IBM SPSS version 20.

Results and Discussion

Disease prevalence in pigeons at Saidpur Upazila (Sub-district) in Nilphamari district

Among the 1000 pigeons examined 219 (21.9%) were affected with different diseases. Prevalence of diseases in relation with types of disease, age, sex, season, rearing system and vaccination are presented in Table 1.

Table 1: Prevalence of diseases in pigeons with type, age, sex, season, rearing system and vaccination

Categories	Variables	+Ve cases	-Ve cases	Prevalence (%)	Chi-square value	P-value and level of significance
Pigeon	Total (n = 1000)	219	781	21.9		
Types of diseases	Bacterial (n =220)	49	171	22.3		
	Viral (n = 180)	34	146	18.9	20.21	0.001 (***)
	Fungal (n = 140)	20	120	14.3		
	Parasitic (n = 300)	90	210	30.0		
	Nutritional and others (n = 160)	26	134	16.3		
Age	0-2 months (n = 450)	102	348	22.7		0.164
	2-6 months (n = 360)	85	275	23.6	3.63	(NS)
	>6 months (n = 190)	32	158	16		
Sex	Male (n = 400)	78	322	19.5		0.134
	Female (n = 600)	141	459	23.5	2.25	(NS)
Seasons	Summer (n = 300)	50	250	16.7	46.63	0.001 (***)
	Rainy (n = 350)	50	300	14.3		
	Winter (n = 350)	119	231	34.0		
Rearing system	Extensive (n = 650)	150	500	23.0	1.50	0.142 (NS)
	Intensive (n = 350)	69	281	19.7		
Vaccination	Vaccinated (n = 400)	68	332	17.0		0.002
	Non-Vaccinated (n = 600)	151	449	25.2	9.36	(**)

NS- Not significant (P>0.05), **statistically significant at 1% level, ***statistically highly significant.

Out of 219 diseased pigeons, parasitic diseases (30.0%) were most prevalent, probably due to poor husbandry and irregular use of anthelmintic without faecal examination. Though the prevalence was high, the mortality rate was low. This was followed by bacterial disease (22.3%), viral disease (18.9%), nutritional and other disease (16.3%) and fungal infection (14.3%). These conditions were probably due to damp bedding material without regular cleaning. Most of the flocks were over-crowded. The findings were consistent with Paul *et al.* (2015). The highest prevalence (23.6%) of pigeon diseases was seen in 2-6 months old followed by 22.7% in 0-2 months old and lowest 16% in those above 6 months old, lower than the findings of Borji *et al.* (2011) and higher than the finding of Paul *et al.* (2015). Disease prevalence was highest (34%) in winter, moderate (16.7%) in summer and lowest (14.3%) in rainy seasons. The prevalence of disease was higher (23.5%) in female than in male pigeons (19.5%). The findings are similar with those of Senlik *et al.* (2005) and lower than those of Arfin *et al.* (2019) and Munmun *et al.* (2016). The prevalence of disease in extensive and intensive rearing systems was 23.0% and 19.7%, respectively. In extensive system the farmer built most of the nest in cow-shed using bamboo material and straw, which favours the chance of infection more than iron cages in intensive rearing. The chance of transmission of enterobacteria is high in cows through feed contamination with pigeon faeces. Vaccinated pigeons had a lower (17%) disease prevalence than non-vaccinated (25.2%) pigeons. There were significant differences ($P<0.01$) in the prevalence among types of diseases, seasons and vaccination, which agrees well with Jiang *et al.* (2016).

Treatment response

Responses to treatment against bacterial infection are shown in Table 2. Group A took six days to fully recover, whereas group B took five days and group C seven days.

Table 2: Response to treatment against bacterial diseases with different drugs

Groups	Drugs used	Dose & route of administration	Average duration of complete recovery (days)
Group A (n = 15)	Sulphaclozine Sodium Monohydrate	@ 2g/litre of drinking water	6.3 ± 0.75
Group B (n = 15)	Oxytetracycline hydrochloride	@ 1g/litre of drinking water	5.7 ± 0.75
Group C (n = 15)	Doxycycline	@ 1g/2 litre of drinking water	7.7 ± 0.75
Level of significance			0.084 (NS)

NS means statistically not significant ($P>0.05$)

The treatment to oral antibiotic was effective. All infected pigeons (n=45) recovered. These results confirm the finding of Rashid *et al.* (2016) who reported that Sulphaclozine Sodium, Oxytetracycline hydrochloride and doxycycline were effective against infectious diseases and the findings agree with Kabir (2014) and Glisson *et al.* (2004). It is suggested that hygiene and biosecurity will be helpful in reducing the disease prevalence in pigeon flocks.

Conclusions

The overall prevalence of pigeon disease was 21.9% and the highest prevalence was seen in parasitic disease. Female pigeons of 2 to 6 months old were more susceptible than the other groups. Unvaccinated pigeons reared in extensive system were more prone to infectious disease than intensively reared vaccinated pigeons. Treatment with oxytetracycline hydrochloride reduces infection more rapidly than other treatments.

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