



Research Article

SURVEY ON PREVALENCE OF COMMON DISEASES IN PIGEON (*COLUMBA LIVIA DOMESTICA*) IN TUTICORIN DISTRICT, TAMIL NADU, INDIA

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ABSTRACT

The aim of the study is to estimate the prevalence of diseases in Tuticorin district and to get an insight in pigeon production, disease management and vaccination status. A sample of 50 pigeon fanciers was randomly selected from different taluks in Tuticorin district and face to face interviews were conducted among them using a standard questionnaire. Among these a total of 202 diseased pigeons was examined. According to age, they were classified into three categories squab (1-2 weeks), young (30-90 days) and adult (>90 days). Those diseases were identified by conducting the survey with a standard questionnaire among the pigeon fanciers and the study duration was from July 2016 to December 2016 and September 2017 to November 2017. Out of 202 diseased pigeons 35.64% were raniket disease or Newcastle disease (paramyxovirus), 18.11% were canker disease, and 11.38% were one eye cold disease. In most of the lofts, the owners didn't vaccinate their pigeons against the common diseases, even though many of them were aware of the diseases. Pigeon fancier's education and awareness of pigeon diseases needs to be improved through veterinary public health and health promotion approach. Non pharmaceutical preventive measures such as hand washing and avoidance of eye, nose and mouth touching after handling of diseased pigeons must be improved. The present study has demonstrated that a study solely based on the questionnaire is not adequate in determining the prevalence of diseases in pigeon and also the results concluded that pigeon fanciers of Tuticorin district do not maintain the regular preventive measures or vaccination against the common diseases and to control the diseases.

Keywords: Canker, Pigeon fancier, New castle disease, Squab.

INTRODUCTION

The word pigeon is derived from Latin word pipio meaning young cheeping bird. Pigeons are used as pets, culture and religious symbols (Sari *et al.*, 2008). Based on the survey report of the Common Bird Monitoring of India (CBMI) 2014, is a citizen science program of Nature Forever Society (NFS,) rock pigeons *Colomba livia* secured first place in the most commonly found birds across India. Out of 8600 known species of birds, 289 species are of pigeons and these pigeons had been associated with human society, both as a source of food and as cage birds for a long time (Dutta *et al.*, 2013). *C. livia*, the domestic pigeon includes

family columbidae is thought to have been derived from European rock doves. They were amongst the earliest animals to be domesticated, and even mentioned in the Old Testament of the Bible. Over thousands of years, they have been used for multitudes of purposes-message carrying, a food source, sport (racing), aviary specimens, show animals and household pets. Selective breeding has produced varieties in size and in colour result in the pigeons we see in practice today. Poultry Industry is the most effective and economical source of animal protein in the shortest possible time. Poultry producers are looking for some substitute of chicken meat which in future will come in the form of pigeons and quail meat to contribute towards the increase

in gross domestic production (GDP) through livestock sector. Moreover, the nutritional and therapeutic values of pigeon meat further enhance their utility. A variety of diseases affect pigeons, but viral diseases predominate in terms of high morbidity and mortality. Newcastle disease (ND) is worldwide in distribution and has a wide range of hosts like chickens, pigeons, turkeys, partridges, pheasants, doves, sparrows, geese, starlings and other free flying birds (Vindevogel *et al.*, 1972). It is caused by avian serotype-1 paramyxovirus in pigeons that is closely related to paramyxoviruses causing ND in poultry, but not identical (Alexander *et al.*, 1985). The disease in pigeons is characterized mainly by sudden onset of listlessness, inappetence, nervous manifestations and inability to fly. Morbidity and mortality averages 100 and 80%, respectively (Eisa & Omer, 1984). Several outbreaks have been reported in pigeon lofts throughout the world, including Sudan (Eisa & Omer, 1984), Continental Europe and Great Britain (Alexander *et al.*, 1984), India (Mangat *et al.*, 1988; Singh *et al.*, 1989), Germany (Fischer, 1986), Pakistan (Shaheen *et al.*, 2005) Turkey (Coven *et al.*, 1999) and Japan (Maeda *et al.*, 1987). Statistically it was found that pigeon diseases in northern Bangladesh comprise bacterial disease (31.30%), viral disease (43.70%), parasitic diseases (9.43%) nutritional deficiency (0.51%) and miscellaneous causes (15.05%). Among the viral diseases Newcastle, Pigeon Pox and Paillomatosis comprise 12.58%, 31.21% and 0.08%, respectively (Parvez *et al.*, 2017). Pigeon rearing should be explored more as it is one of the promising species for future income earning opportunities for many people, offering scope for reducing the unemployment problem in India. This is good small scale commercial entrepreneurship for the pigeon fanciers. But recently pigeons are affected with different types of diseases like raniket (Newcastle disease), coccidiosis, one eye cold, canker etc. For this interest the study was done to investigate the prevalent diseases commonly affect pigeons and cause of pigeon death and decrease production.

MATERIALS AND METHODS

Study area

Tuticorin district is situated in South Eastern corner of Tamil Nadu. It is located 615 k.m. north towards State capital Chennai. It is also called as Pearl City and sea gateway of Tamil Nadu. It is the 20th largest district in the state by population. It is located at latitude 8.80, longitude 78.1. Tuticorin district is sharing border with Ramanathapuram district to the east, Tirunelveli district to the west, Virudhunagar district to the north and southeast by Gulf of Mannar. It occupies an area approximately 4621 square k.m. It is the coastal district sharing border with Bay of Bengal.

Survey of Pigeons

Field visit was conducted in 3 Taluks Thoothukudi, Tiruchendur and Sathankulam of Tuticorin district from July 2016 to December 2016 and from September 2017 to November 2017. Pigeon lofts maintained by rural and

urban growers were surveyed. 50 pigeon fanciers were randomly selected and they were individually interviewed. The total of 202 diseased pigeons was diagnosed based on clinical signs. A structured questionnaire was developed for data collection from the fanciers. Based on questionnaire data on breed, age, feeding system, loft management techniques were recorded. Data on diagnostic and therapeutic protocol used were also collected. Clinical signs were recorded includes weakness, loss of body weight, greenish diarrhoea, watery diarrhoea, cheesy material in mouth, one eye swelling and occulo-nasal discharge. These signs were detected by using a general physical examination of the mouth, nostril, eye, feather and faeces. Clinical signs, morbidity and mortality rates were also recorded throughout the examination.

RESULTS AND DISCUSSION

During nine months of study period a total of seven diseases were found from 202 (squab 43, young 65, adult 94) diseased pigeons. Out of 202, 18.81% were canker, 35.64% were raniket (paramyxovirus or Newcastle disease), 13.5% were one eye-cold, 11.38% were worm infection and rests of the disease were below 10% (Table 1). Fifty pigeon lofts were visited, out of which 72 pigeons (35.64%) showed clinical signs of Newcastle disease or raniket disease. Surveys indicated that onset of raniket disease in pigeons was sudden. Affected pigeon showed in listlessness, depression, greenish white diarrhoea and death. Morbidity was 90% and mortality was 100% in squab, 98-99% in young and adult birds. Diarrhoea, the most common clinical sign was present in 48.61% of the affected pigeons, followed by twisting of head and neck 29.16%, trembling or shivering 22.22%. Respiratory signs were not observed in any of the pigeon farms in the present study. Most of the clinical signs observed during the study included twisting of head and neck (tremors) are shown in Figure 1. The signs along with respective percentages have been illustrated in Table 2.

Among the collected data from the study period raniket disease or Newcastle disease was higher than others. In the present study, greenish white diarrhoea and nervous signs were more frequently observed. Barton *et al.*, (1992) also observed diarrhoea and nervous signs associated with ND in racing pigeons. In the present study nervous signs in 29.16% cases, diarrhoea in 48.61% and shivering in 22.22% cases was observed, but (Fischer, 1986) observed nervous signs in 86% cases, diarrhoea in 18% and paralysis of legs and wings in 9% of naturally affected pigeons. Many other workers have reported similar signs of ND in pigeons in experimental (El Mubarak *et al.*, 1990; Mishra *et al.*, 2000) and field outbreaks (Eisa & Omer, 1984; Fischer, 1986; Mangat *et al.*, 1988; Tangredi, 1985). Khan, (1968) reported paralysis of legs and wings in 80 and 60% experimentally infected pigeons, respectively. The occurrence of paralysis and nervous signs reported by Khan, (1968) are fairly higher than those observed in Pakistan. The occurrence of paralysis of legs and wings was not observed in the present study. No respiratory signs were also observed in the present study.



Figure 1. New castle or raniket in pigeon.



Figure 2. Canker in pigeon.



Figure 3. One-eye cold in pigeon.



Figure 4. Coccidiosis affected pigeon's droppings.

Table 1. Occurrence of different common diseases of pigeon (n =202).

Disease	Number	Percentage (%)
Canker	38	18.81
Raniket or Newcastle disease	72	35.64
One-eye cold	27	13.5
Worm infection	23	11.38
External Parasite	13	6.43
Coccidiosis	19	9.4
Nutritional Deficiency	10	4.95

Table 2. Clinical signs observed in ND infected pigeons (n=72).

Clinical signs	No. of birds	Percentage (%)
Diarrhoea	35	48.61
Nervous signs (Twisting of head & neck)	21	29.16
Shivering	16	22.22

Table 3. Raniket (Newcastle disease) affection and mortality rate in different stage of pigeon life (n=72).

Stage of life	No. Affected	No. Death	Percentage %
Squab (Age under 1- 2 weeks)	31	31	100
Young (30 days – 90 days)	17	16	94.11
Adult > 90 days	24	23	95.8

Khan, (1968) did not observe any respiratory signs in field outbreaks or experimentally inoculated pigeons, but laboured breathing and respiratory distress was reported in pigeons kept in a cage adjoining experimentally infected pigeons. As causes raniket or Newcastle disease found within those farm and pigeon loft, the owners have not adopted any preventive measures or vaccination was adopted to control the diseases. Other infection occurs because of their unhygienic management. The fanciers in these taluks do not have enough knowledge and awareness about pigeon disease control and management. According to age the pigeons are classified into three categories squab (1 -2 weeks), young (30 – 90 days) and adult (> 90 days). Raniket affected squab died within 1 week and sometime young ones and adults were also died. Mortality rate along with respective stage of life have been illustrated in Table 3. The pigeons infected with canker, one- eye cold and droopings of coccidiosis infected were shown in Figures 1-4 respectively.

CONCLUSION

From this study, it is concluded that due to high mortality rate Newcastle disease is an important harmful disease for pigeon rearing. Greenish white diarrhoea, head twisting and shivering are major clinical signs. And also, coccidiosis, one-eye cold, canker, external parasitic infection, and nutritional deficiency diseases were common diseases prevalent in Tuticorin district. Pigeon farming is the most productive business in recent time. Many people, both village and town are engaged with pigeon rearing for quick return of their investment. It is a more popular business for the farmer and creates scope by elite class people keeping pigeons for their entertainment. But they have no enough knowledge about pigeon rearing and management and so pigeons are affected with various diseases. Farmers sometime lose their investment money, so pigeon farmers would be benefited utilizing the information regarding diseases from the current records.

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REFERENCES

- Alexander, D., Russell, P., Parsons, G., Elzein, E. A., Ballouh, A., Cernik, K., Guittet, M. (1985). Antigenic and biological characterisation of avian paramyxovirus type I isolates from pigeons-an international collaborative study. *Avian Pathology*, 14(3), 365-376.
- Alexander, D., Wilson, G., Thain, J., & Lister, S. (1984). Avian paramyxovirus type 1 infection of racing pigeons: 3 epizootiological considerations. *The Veterinary Record*, 115(9), 213-216.
- Barton, J., Bickford, A., Cooper, G., Charlton, B., & Cardona, C. (1992). Avian paramyxovirus type 1 infections in racing pigeons in California. I. Clinical signs, pathology, and serology. *Avian Diseases*, 463-468.
- Coven, F., Alexander, D., Misirlioglu, O., & Ozdemir, I. (1999). A study of paramyxovirus-1 infection in pigeons. *Bornova Veteriner Kontrolve Arastirma Enstitusu Dergisi*, 24, 1-10.
- Dutta, P., Borah, M. K., Sarmah, R., & Gangil, R. (2013). Isolation, histopathology and antibiogram of *Escherichia coli* from pigeons (*Columba livia*). *Veterinary World*, 6(2), 91-94.
- Eisa, M., & Omer, E. (1984). A natural outbreak of Newcastle disease in pigeons in the Sudan. *The Veterinary Record*, 114(12), 297-297.
- El Mubarak, A., EM, A. E., & AI, A. E. (1990). Note on the pathology of experimental infection of pigeons by the pigeon paramyxovirus type I (PPMV-1). *Revue d'élevage et De Médecine Vétérinaire des pays Tropicaux*, 43(4), 441-444.
- Fischer, E. (1986). Pathology of spontaneous paramyxovirus-1 infection in pigeons. *Inaugural-Dissertation Fachbereich Veterinarmedizin Justus-Liebig-Universität, Giessen, German Federal Republic*, 84.
- Khan, M. (1968). *Epizootiology of Newcastle disease in wild birds*. MSc. Thesis, Dept. Microbiol., West Pakistan Agri. Univ., Lyallpur, Pakistan.
- Mangat, A., Singh, G., & Gill, B. (1988). An outbreak of paramyxovirus encephalomyelitis in racing pigeons in India. *The Veterinary Record*, 123(19), 496.
- Maeda M, S Koizumi and M Yachi, 1987. (1987). Histopathological changes in Newcastle disease

- affecting racing pigeons in Japan. *The Japanese Journal of Veterinary Science*, 49(2), 217-223.
- Mishra, S., Kataria, J., Sah, R., Verma, K., & Mishra, J. (2000). Pathogenesis of Newcastle disease virus isolates in pigeon. *Indian Journal of Animal Sciences*, 70(11), 1125-1126.
- Parvez, M. N. H., Islam, M. R., Akter, M. T. D., & Sarder, M. J. U. (2017). Clinico-histopathological observations of pigeons (*Columba Livia*) suffering from Newcastle disease in Northern Bangladesh. *Asian Journal of Medical and Biological Research*, 3(1), 134-139.
- Sari, B., Karatepe, B., Karatepe, M., & Kara, M. (2008). Parasites of domestic (*Columba livia domestica*) and wild (*Columba livia livia*) Pigeons in Nigde, Turkey. *Bulletin of the Veterinary Institute in Pulawy*, 52(4).
- Shaheen, S., Anjum, A., & Rizvi, F. (2005). Clinico-pathological observations of pigeons (*Columba livia*) suffering from Newcastle disease. *Liver*, 2(7.14).
- Singh, G., Mangat, A., & Gill, B. (1989). Isolation of Newcastle disease virus (Avian paramyxovirus-1) from pigeons (*Columba livia*) in India. *Current Science*, 58(3), 154-155.
- Tangredi, B. P. (1985). Avian paramyxovirus type I infection in pigeons: clinical observations. *Avian Diseases*, 1252-1255.
- Vindevogel, H., Meulemans, G., Halen, P., Schyns, P., & Bourgueil, P. (1972). *Sensibilité du pigeon voyageur adulte au virus de la maladie de Newcastle*. Paper presented at the Annales de Recherches Vétérinaires, 3, 519-532.