hygiene and community health should take adequate measures. Faulty, inadequate and required facilities should be renovated and provided respectively.

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PREVALENCE OF FOWL POX IN TURKEYS AND CHICKENS AND THEIR MANAGEMENTS AT AREA VETERINARY CLINIC, AZARE, BAUCHI STATE, NIGERIA

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ABSTRACT

The study was carried out to determine the prevalence of fowl pox in turkeys and chickens and their clinical managements in north-eastern Nigeria. Five (5) years clinical data on poultry diseases containing about 3700 cases were collected from Area Veterinary Clinic Azare, Bauchi State Nigeria. Information on fowl pox in chicken and turkey were then extracted 1236 (33.40). The data revealed that turkeys had higher prevalence, (69.58%) compared to chickens (30.42%). The frequency of female infected birds 697(56.39%) was higher than male counterparts 539(43.61%), and young birds 744(60.20%) are more prone to the infection than the adult 492(39.80%). Yearly incidence of fowl pox in turkeys and chickens from 2014 - 2018 was greatest in 2016 (300 cases) with 196 turkeys (65.33%) and 104 chickens (34.67%) while in the year 2018, 150 cases were recorded. The overall prevalence of fowl pox associated with chickens was recorded in 2016, 104(27.66%), but the highest overall prevalence of fowl pox in turkey was in 2017, 23.73% (201). The result also reveals that prevalence of the disease increases from May to August and declined through December. About 71.93% of the management/ treatment given to the infected birds were scrapping, dressing (reduction of the viral load) and antibiotic administration against secondary bacterial infection; this implies that it is the most commonly used and effective management system adopted. Therefore, ideal poultry husbandry and other management practices should be implemented in poultry production areas to prevent the incidence of the disease by improving the hygiene of birds.

Keywords: Fowl pox, Turkey, Chicken, Prevalence

INTRODUCTION

The Poultry industry occupies an important position in the provision of animal protein (meat and egg) to man and generally plays a vital role in the national economy as a revenue provider. Unfortunately, the incidence of infectious diseases is one of the greatest constraints to the development of successful expansion and increased productivity of poultry in smallholder and commercial poultry industries (Lawal *et al.*, 2015).

Fowl pox is a viral disease caused by avipoxvirus belonging to the chordopoxvirinae subfamily of the poxviridae family, which induces pustular, benign and proliferative lesions of the skin and diphtheritic lesions on the mucous membrane of the digestive and respiratory passages. The disease affects both domestic and free-living birds in nature resulting in varying morbidity and mortality, (Adebajo *et al.*, 2012). Fowl pox, is also kwon as Avian pox, pox, bird pox, poxvirus infection, avian diptheria, contagious epithelioma, molluscum contagiosum, Gefluegelpocken (German), viruela aviar (Spanish), variole aviaire (French), bouba (Portuguese) (Riper and Forrester, 1992).

Fowl pox is a slow-spreading virus disease of chickens and turkeys in which two forms of the disease are associated with different routes of infection. The disease can occur as a mild cutaneous form (dry pox) or as a diphtheritic form (wet pox). Lesions occur on the mucous membranes of the mouth, esophagus, upper respiratory and digestive systems, (Lawal *et al.*, 2015).

The mortality rate is higher in the diphtheritic form than in the cutaneous form, sometimes nearing 50% particularly in young birds. APVs are transmitted through direct contact or by mechanical vectors, primarily mosquitoes and other sucking flies. Diagnosis of fowl pox is not difficult and can be made on the basis of clinical signs and lesions, while confirmation is by histopathology or immunology or virus isolation (Lawal *et al.*, 2015). Although, fowl pox is a low spreading viral disease and its mortality rate is virtually low according to many researches, the morbidity of the disease preferentially increases during the rainy season and this can have more impact on the poultry farmers. Therefore, this research was designed to evaluate the prevalence of fowl pox in the study area and to offer responsive management measures that will limit the disease.

METHODOLOGY

Description of the Study Area

Study area

Azare is the headquarter of Katagum local government area in Bauchi state, Nigeria. The main ethnic groups in the area are Hausa, which account for about 95% of the total population, Kare-kare, Bolawa and others share the remaining 5%. Azare is bordered to the north by Gadau district in Itas Gadau local government area, to the east by Fatara in Katagum local government, to the south by Giade local

government and to the west by Jamaare local government.

Climate

The study area is located in northern part of the country which experienced rainy and dry seasons. Rainfall for effective farming commences between May and June and terminate in September, and sometime October. The average annual rainfall received in the area is usually 750 mm to 780 mm. The temperature is generally high throughout the month of April to June with a mean daily temperature of 22°C. There is cool dry season between November and February followed by hot dry period from March to May. There is also hot dry period which later runs into warm and wet weather.

Data Collection

Data were collected from Area Veterinary Clinic Azare record book, from January 2014 to August 2018. Information on Avian pox (Chickens and Turkey) only was extracted from the clinic records.

Statistical analysis:

The distribution pattern of Fowl Pox in Turkey and Chickens with respect to species, sex, age and their respective managements was analysed by simple percentages.

RESULT AND DISCUSSION

RESULTS

The result for this research was summarized in the following tables. The overall incidence (from 2014 - 2018) of fowl pox among turkeys and chickens is presented in Table 1. Out of 1236 infected birds, 860 (69.58%) were Turkeys and 376 (30.42%) chickens.

Table 1. Incidence of Fowl Pox among Turkeys and Chickens.

Overall number of infected birds	Number of infected Turkeys	% of infected Turkeys	Number of infected chickens	% of infected chickens
1236	860	69.58	376	30.42

The distribution pattern of fowl pox between species, sex and age was presented in Table 2. The frequency of female infected birds 697(56.39%) was higher than male counter parts 539(43.61%). The table also shows that young birds had higher prevalence 60.20 (744) are more prone to infection compared to the adults 492(39.80%).

Table 2. Distribution Pattern of Fowl Pox between Species, Sex and Age in Turkeys and Chickens.

Risk factors		`Number of infected bird	Percentage (%)
Species	Turkeys	860	69.58
	Chickens	376	30.42
Sex	Male	539	43.61
	Female	697	56.39
Age	Young	744	60.20
	Adult	492	39.80

Yearly incidence of fowl pox (2014 - 2018) with respect to species (turkeys and chickens) is shown in Table 3. The highest prevalence of the disease was recorded in 2016 (300) with 196 turkeys (65.33%) and 104 chickens (34.67%) while in the year 2018 only 150 cases were recorded.

Table 3. Yearly Incidence of Fowl Pox Disease Among Species of Turkeys and Chickens.

Years	Number of infected birds	Number of infected Turkeys	%	Number of infected Chickens	%
2014	260	173	66.54	87	33.46
2015	276	182	65.94	94	34.06
2016	300	196	65.33	104	34.67
2017	250	201	80.40	49	19.60
2018	150	108	72.00	42	28.00

Table 5. shows The type of management/ treatment given to the infected birds is shown in Table 5, and it shows that scrapping, dressing and antibiotic administration was the most commonly used and effective management system adopted.

Table 5. Types of Managements/Treatment Given to Infected Birds.

Types of Treatment	Number of Birds Treated	Percentage
Antibiotics only	133	10.76
Scrapping and dressing only	214	17.31
Scrapping, Dressing plus antibiotic administration.	889	71.93

The Monthly distribution of fowl pox for five years (2014 -2018) is shown in Table 6. In all, the prevalence increases persistently from May to August and decreases towards December.

Table 6. Monthly Distribution of Fowl Pox (Turkeys and Chickens).

YEARS	JAN	FEB	MAR	APL	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOL
2014	9	7	13	17	24	36	44	40	35	23	6	6	260
2015	12	10	17	16	30	50	46	49	27	10	4	5	276
2016	4	8	12	14	26	47	55	60	43	14	10	7	300
2017	7	6	14	16	28	42	39	38	36	12	9	3	250
2018	6	9	11	18	26	17	22	41	_	_	_	_	150

DISCUSSION

From the data collected for this research to determine the prevalence of fowl pox in chickens and turkeys that are taken to area veterinary clinic Azare for five years (2014 - 2018), the results revealed an overall incidence of 69.58% for Turkeys and 30.42% for chickens as presented in Table 1. The result indicated that turkeys because of their economic value, are mostly brought to the clinic for treatment or clinical consultation than any other poultry specie, and thus higher prevalence according to the record obtained. This finding is in agreement with the work of Lawal *et al*., (2015) where a Six – Year Retrospective Study (2008 – 2013) revealed prevalence of avian pox disease in turkeys to be 56.3% and chickens had 31.2%. This may be due to the fact that the disease is more severe in birds with large comb and wattle which is attributed to turkeys than chickens. The frequency of female infected birds which was 697(56.39%) was higher than male counter parts 539(43.61%). Although, it has been previously stated by Alehegn *et al*. (2014) that avian pox disease is more likely to occur in male birds because of their tendency to fight and cause skin damage and where there are vectors of fowl pox such as biting insects that have already harboured the disease, infection can be transmitted. The table also indicated that young birds are more prone to the infection 744(60.20%) compared to the adults 492(39.80%) (Table 2.). This is also supported by Lawal *et al*., (2015) and Sa'idu *et al*., (2016), who reported age variations in the prevalence rate of fowl pox., In the said study, the young showed prevalence of 44.7% as compared to 13.8% in adult birds. Although fowl pox can occur in all ages of birds, the younger ones have greater chances of infection during an outbreak as they may not have sufficient antibodies or immunity against the disease.

Yearly incidence of fowl pox (2014 - 2018) with respect to species (turkeys and chickens) shows that higher prevalence of the disease was recorded in 2016 (300 cases) with 196 turkeys (65.33%) and 104 chickens (34.67%) while in the year 2018, 150 cases were recorded which is the least, (table 3.). The overall prevalence of fowl pox associated with chickens was recorded in 2016, 104(27.66%), but the overall pox infection cases in turkey was in 2017, 201(23.73%). About 71.93% of the management/ treatment given to the infected birds was scrapping, dressing (the reduction of the viral load) and antibiotic administration against secondary bacterial infection. This implies that it is the most commonly used and effective management methods adopted. (Table 5.), and this is in line with the report by Riper and Forrester s (1992). Monthly distribution of fowl pox for five years (2014 -2018) is shown in Table 6. In all, the prevalence increases from May to August (rainy season) because the transmission is mainly by biting insect such as mosquitoes and mites which are predominant within this period. (Simon and Morten, 2014); and the prevalence decreases towards December.

CONCLUSION AND RECOMMENDATION

In conclusion: Turkeys most especially females and young ones are more prone to fowl pox. Although, several clinical managements are practiced, scrapping, dressing and antibiotics administration were the most effective management practices. Preventing the incidence of the disease by improving the hygiene of birds is strongly recommended. Vector transmission should also be prevented by controlling mosquitoes and other blood sucking insect breeding habitats. A well-organized avian pox vaccination is also encouraged.

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