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A Retrospective Study of Poultry Diseases Diagnosed in Maiduguri, North-East, Nigeria

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Abstract

A nine year (2004-2012) retrospective study of clinical records of poultry diseases presented to the poultry unit of the University of Maiduguri Veterinary Teaching Hospital (UMVTH) and the State Veterinary Hospital (SVH) Maiduguri, was conducted. Out of a total of 2,317 cases recorded, viral diseases accounted for 1461 (63.1%) cases, bacterial diseases were 580 (25%), parasitic diseases were 236 (10.2%) while 40 (1.7%) of the cases were non-infectious. Newcastle disease (ND) was the most recorded disease with 851 (36.7%) cases, followed by Infectious bursal disease (IBD) with 380 (16.4%) cases while helminthosis were the least recorded diseases with 11 (0.5%) cases and Marek's disease was not recorded throughout the study period. Most diseases occurred during the rainy season (56.3%) when compared to dry season (43.7%). Years 2005 and 2009 recorded the lowest (167) and highest (592) occurrence of disease respectively. Poor management practices by the farmers in addition to lack of awareness on diagnostic laboratory services may be associated with the distribution pattern of cases recorded in the hospitals. Control and prevention strategies can only be successful after a careful assessment of each condition.

Keywords: Infectious bursal disease; Newcastle disease; Coccidiosis; Fowl typhoid; Maiduguri

Introduction

Poultry production in Nigeria is an important component of the livestock sub-sector and has developed to the level of commercial enterprise involving thousands of birds that provide employment, income, animal protein for urban and rural dwellers as well as manure for crop production. It is an important instrument for alleviating problems associated with poverty in Nigeria (food security and malnutrition) and significantly contributes to women's income and helps meet some levels of household protein needs [1]. Small holder poultry farmers that operate various production strategies provide the bulk of poultry meat and eggs for the populace [2]. Abdu et al. [3] identified diseases as major constraints in the development of the poultry industry in Nigeria thus causing a huge loss to farmers. Major diseases of poultry in Nigeria that have been predominantly identified in commercial poultry are Newcastle Disease (ND), Infectious Bursal Disease (IBD) or Gumboro. Others include marek disease (MD), Fowl typhoid, Fowl cholera, Mycoplasmosis and Coccidiosis [4]. Although analysis of poultry diseases has been conducted earlier on in the state by Ambali et al. [5], the authors wish to determine the recent distribution of poultry diseases diagnosed over a nine year period (2004-2012) in Maiduguri and suggest possible control measures to the problems.

Materials and Methods

Study area

All the cases studied were presented to veterinary clinics located in Maiduguri, a city situated between 11° 32'N and 11° 40'N and longitudes 13° 32'E and located between the Sudan savannah and Sahel savannah vegetation zones [6].

Data collection

Clinical records of cases diagnosed at the Poultry Clinics of the University of Maiduguri Veterinary Teaching Hospital (UMVTH) and the State Veterinary Hospital (SVH), Maiduguri, Nigeria, were obtained from January 2004 to December, 2012. These data were analysed with regard to condition of disease and season. A case was defined as a farm that reported an outbreak of a disease and was diagnosed based on history, clinical signs, postmortem findings, and laboratory results. The results of the analyses were determined and presented as percentage distribution in tabular forms.

Results

A total of 2,317 cases of poultry diseases were documented during the nine years study period, giving an average of 257.4 cases annually (Table 1).

Among the viral diseases reported and diagnosed in the two hospitals, Newcastle disease (ND) has the highest occurrence (36.7%) followed by Infectious Bursal Disease (IBD) (16.4%). However, no case of Marek's disease was diagnosed within the period under study. Collibacillosis had the highest rate of occurrence (10.5%) among the bacterial diseases diagnosed, followed by fowl typhoid (5.7%) while Pullorum disease were least reported (0.7%). Of all the parasitic diseases diagnosed, coccidiosis occurred more (9.5%) than helminthosis (0.5%) and ectoparasitism (0.2%) and non-infectious diseases only accounted for 1.7% of the cases reported. In all, viral diseases are the most (63.1%) diagnosed diseases followed by bacterial diseases (25%), while non-infectious diseases were the least diagnosed (1.7%).

Discussion

The result of the present study showed an increase in the

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Diseases	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total (%)
Viral diseases (63.1%)										
ND	74	60	33	49	101	199	161	113	61	851 (36.7)
IBD	33	37	30	39	58	67	51	44	21	380 (16.4)
Fowl pox	17	20	11	11	6	7	1	0	0	73 (3.2)
Marek's disease	0	0	0	0	0	0	0	0	0	0 (0)
Mycoplasmosis	3	2	5	15	16	68	46	1	1	157 (6.8)
Avian influenza	0	0	0	0	0	0	0	0	0	0 (0)
Parasitic diseases (10.2%)										
Coccidiosis	17	17	14	22	39	83	16	7	5	220 (9.5)
Helminthosis	0	0	0	3	2	3	3	0	0	11 (0.5)
Ectoparasitism	0	0	1	0	1	1	2	0	0	5 (0.2)
Bacterial diseases (25%)										
Pasteurellosis	0	0	5	10	8	16	1	0	0	40 (1.7)
Colibacillosis	7	8	4	19	17	63	48	49	29	244 (10.5)
Fowl typhoid	7	12	15	13	16	29	21	13	5	131 (5.7)
Fowl cholera	8	5	2	27	8	16	0	3	0	69 (2.9)
Pullorum disease	2	2	3	4	3	1	1	0	0	16 (0.7)
Necrotic enteritis	5	4	2	9	7	27	10	14	2	80 (3.5)
Non infectious										
Diseases (1.7%)	0	0	6	3	8	12	11	0	0	40 (1.7)
Total	173	167	131	224	290	592	372	244	124	2317 (100)

Table 1: Prevalence observed on reported cases of Poultry diseases in Maiduguri, Borno State from January 2004 to December 2012.

prevalence of disease when compared to previous reports by Ambali et al. [5]. For instance the prevalence of ND in the present study was higher (36.7%) compared to previous reports of Abdu et al. [7]. This increase has remained relatively steady for the nine year period under study. The steady increase in the number of cases diagnosed from 2007 to 2009 could probably be due to the media advertisement on avian influenza and the need for reporting of cases of flock mortalities [8,9], while the decrease thereafter could be as a result of the insurgency that befall the state during the study period which militated against clients freedom of movement that may warrant low case turnout to the clinics. The absence of a report on Marek's disease is contrary to the 8.3% prevalence reported in Zaria during the same period [10]. This may likely be associated with the type of birds raised in this area, Mareks is associated with birds reared for longer periods such as layers, whereas in Maiduguri, most of the birds reared are broilers which are kept for short period (8 weeks).

Viral diseases (such as Newcastle disease and Infectious bursal disease) being the most diagnosed poultry disease in the two hospitals are in agreement with an earlier study done in the state by Ambali et al. [5], where the authors reported ND and IBD as the two major viral diseases diagnosed. However, Newcastle disease which has a higher prevalence in this report is considered the most economically important avian viral disease in the world including developing countries due to its devastating effect on the poultry industry [10,11]. Newcastle disease can produce mortality of up to 100% among infected population of birds [12,13] and unfortunately the prognosis is poor once birds are infected. This created the reason for the alarming frequent reports to the clinics. El-Yuguda and Baba [14] reported ND to be the greatest threat to poultry industry in the study area, therefore the need for frequent all year round routine vaccination against ND in the State in order to conquer the threat presented by ND so as to prevent epizootics. It is known that vaccination of poultry provides an excellent means to lessen clinical signs of infection caused by virulent ND virus [15-17]. There are several possible reasons for low level of protection in birds, such as poor vaccine quality, unsuitable vaccination schedule or vaccination techniques, impaired immune-competence due to immunosuppressive substances in the feed or to immunosuppressive diseases, and therefore, unable to protect birds from ND virus infection [18]. In a similar report, ND was reported to be the most frequently diagnosed poultry disease (32.3%) in Zaria [19], though the finding in the present study may be slightly higher (36.7%) for ND than the report from Zaria, but the difference is not significant statistically. Infectious bursal disease is the second most frequent poultry viral disease that were reported and recorded at the Veterinary clinics in the study area with the prevalence rate of 16.4%, while IBD was reported to be the most frequently diagnosed disease in Sokoto (32.9%) [20]. The occurrence of IBD is most common in young birds and the disease has been reported to be a highly contagious avian viral disease especially in young birds [21].

The prevalence of fowl pox as recorded is 3.2%. The disease is usually diagnosed according to the appearance of cutaneous lesions and the prevalence is low in this study area. This agrees with the worldwide physical diagnosis of avian pox virus infections at a tentative level as reported by Afonso et al. [22] and Fallavena et al. [23]. Mycoplasmosis is also an important disease of veterinary concern, although its report to the clinics in the study area is low at the rate of 6.5%. But the fact that mortality due entirely to mycoplasmosis is negligible, it is important to veterinarians because it predisposes affected birds to other disease producing organisms as reported by Agrilnfo [24]. There has been no report of outbreaks of neither highly pathogenic avian influenza nor any of its mild form in the study area.

Among the bacterial diseases of poultry recorded in the study area, Colibacillosis and Fowl typhoid are the most frequently reported and recorded avian bacterial disease with a prevalent rate of 244 (10.5%) and 131 (5.7%) respectively. This concise with similar reports by Wigley et al. [25] and Berchieri et al. [26] that stated that avian Colibacillosis and Salmonellosis are considered to be the major bacterial disease problems in the poultry industry worldwide and that these disease constitute a major public burden and represent a significant cost in many developing countries including Nigeria. Although Colibacillosis

has been reported to be a major infectious disease in birds at all ages, ND or infectious bronchitis (IB) as well as nutritional deficiencies can predispose the birds to both Collibacillosis and Salmonellosis [27].

Necrotic enteritis was also reported to have a low prevalence of 3.5% in the study area. This disease has been reported to be the most common and financially bacterial disease in modern broiler flock [17,28,29]. The disease is a complex, multifactorial disease with many unknown factors influencing its occurrence and the severity of outbreaks. However, the occurrence of Nercrotic enteritis is often associated with an outbreak of coccidial infection.

The protozoan disease of clinical consideration in this area is Coccidiosis. The prevalence is similar to that reported by Bukar-Kolo et al. [30]. The fact that the organism is ubiquitous, they are everywhere chickens are reared [31]. A severe attack of coccidiosis can however cause weight losses, morbidity and mortality [32]. Coccidial infections causes damage to the intestinal lining, making the gut susceptible to other infections including *Clostridium perferinges* [33,34].

The high incidence of poultry diseases reported to the Veterinary clinics was high during the dry period. This ranges between the months of October to April. This is similar to a report on the seasonal occurrence of poultry disease in Sokoto, Nigeria [20]. Most diseases occur all year round in most poultry populations, but are more common and severe at times of climatic stress.

Newcastle disease was highly prevalent in the dry season in the study area. This is in agreement with a study by Sonaiya [35], who reported ND to be more common during cold windy harmattan season.

Conclusions

The high prevalence of poultry diseases reported at the study area may be attributed to the fact that few poultry farmers vaccinate their birds against most of the poultry diseases. This finding agrees with the results of similar studies in Northeastern Nigeria in which difficulties associated with vaccination of chickens led to higher prevalence of infectious diseases [36]. Also, usage of disinfectants and sanitizers could have helped in controlling some of the diseases that were reported.

Recommendations

An in depth studies on the epidemiology of these diseases should be carried out and also exposure to disease organisms should be reduced by ensuring proper biosecurity measures and stress management. Disease outbreaks should be treated with specific medications that are effective against the diseases.

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