A Retrospective Study (2000-2005) of Poultry Diseases Diagnosed at Department of Avian diseases & Diagnosis, Veterinary Research Institute (VRI)-Khartoum, Sudan

Khalda,Abdelaziz Khalifa[1], Egbal Sidahmed Abedlrahim[1], Iman,Mohamed ELNasri[1], Selma Osman Ahmed[1], Abdelgadir Ballal[1], Jeddha Ibrahim Elhaj[1]

Veterinary Research Institute, P. O. Box 8067, Khartoum, Sudan
igbalsss@hotmail.com

Abstract: A Retrospective study of poultry diseases diagnosed at (VRI)-Khartoum, Sudan was carried out to establish the occurrence, distribution of diseases, species, ages involved & seasonality over the period 2000-2005. Chicken was the most species subjected to diseases (90.89%) among which Hisex and Bovan breeds were equally and mostly involved (485 breeds each). Birds at age of 2&4 months were the most susceptible (30.6% &16.8%) respectively. The years 2001 and 2005 recorded highest 356(24.9%) and lowest 153(10.7%) disease occurrences respectively with average 238 cases annually. A total of 1427 cases were recorded out of which 651(45.6%) were bacterial and mycoplasma diseases, 595 (41.7%) parasitic and 179 (12.5%) viral diseases. Of the bacterial diseases diagnosed, chronic respiratory disease was of the highest percentage (23.6%) followed by E.coli (23%), Staphylococcus (12.7%) and Klebsiella (10.2%). Whereas other diseases of low occurrence were Corynebacterium, streptococuss, aeromonas and spirochaetes. Parasitic diseases included Coccidiosis (55.3%), and tape worm infestation (42.4%). The most reported viral diseases were IBD (43.6%), ND (27.9%) and IB (20.7%). Fungal infections were rare. Nutritional deficiency was not reported. The summer represented the period of increased disease occurrence of 41.1% (587 cases) which on comparison to that of winter season 34.3% (489 cases) and autumn 24.6% (351 cases). Poor management, self medication practices by poultry farmers in conjunction with inappropriate vaccine handling and awareness on diagnostic laboratory services may be factors that increase poultry diseases problems in Sudan. [Khalda A Khaifa, Egbal S A/Rahim, Iman M ElNasri, Selma O A., Ballal A, Jeddha I E. **A Retrospective Study (2000-2005) of Poultry Diseases Diagnosed at Department of Avian diseases & Diagnosis, Veterinary Research Institute (VRI)-Khartoum, Sudan.** *J Am Sci* 2013;9(7s):42-45]. (ISSN: 1545-1003). http://www.jofamericanscience.org. 6

Key words: retrospective, study, poultry, diseases, Sudan

1.Introduction

Poultry industry is the largest and most highly automated industry due to the cheapest prices of poultry products compared to other animal products**.** World poultry production has been constantly increasing at the rate of 4% annually. The total poultry population in Sudan estimated to be over 47 million birds. More than 90% of intensive poultry projects were found in Khartoum State (Sirdar, 2010).

Recently, the increase in consumption of poultry products was due to health factors as the poultry meat has low cholesterol level and is easier to digest than the red meat. Also poultry rearing is simple and the out put elevates the standard of living of individuals. So the protection of poultry sector is the main issue of Avian Diseases Diagnosis department, (VRI), Khartoum; this was achieved by rapid diagnosis of diseases that threaten poultry population. Recording system and surveillance of major poultry diseases is necessary for diseases control strategies in Sudan.

Previously analysis of poultry diseases has been conducted in some part of the country (Elhussein *et al.,* 1998).

This paper highlights on poultry diseases diagnosed at VRI during the period 2000-2005. Recent information on the prevalence of poultry diseases in the country is scanty hence a need to conduct this study is a raised.

2.Materials and Methods

Data collection

Data on clinical cases of poultry submitted to VRI for six years were recorded and analyzed in terms of localities, breeds, incidence and age at risk, using proportions and simple percentage methods.

Tentative diagnosis of poultry diseases at VRI, depend on history of the flocks that mainly obtained from poultry owners through questionnaire, clinical manifestations and post mortem findings. However, confirmation of diagnosis was performed by laboratory examinations which include bacterial, viral, parasitic, histopathology investigations.

3.Results and Discussions

The Department of Avian diseases & Diagnosis**,** **(**VRI) is a national Laboratory that received samples for diagnosis from allover the country as shown in Table (1). Most of samples submitted were from Khartoum State followed by Gezira. Khartoum State is the capital of Sudan that compromise more than 7

million people. There were 252 layer farms in Khartoum distributed in 31 different area with total population of 2,221,800 birds and more than 90% of intensive poultry projects were found in Khartoum (Sirdar, 2010). Gezira is an agricultural and industrial State that has easy transport for submission of samples to the lab. Other States represented lower numbers of cases as poultry production in these States is slow developing; this may be due to far distances from chick's distributors besides dependence of people and small farmers on backyard chicken.

Table (1). Distribution of disease outbreaks according to States

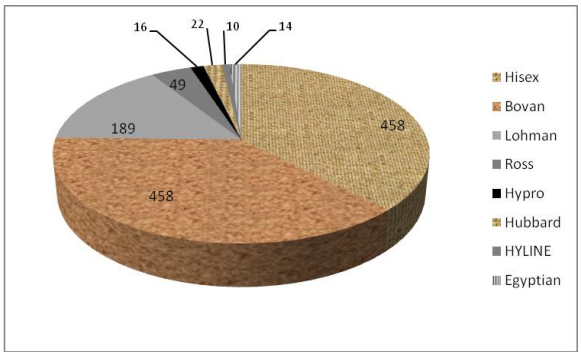
State	No. of diseases outbreaks	%
Khartoum	910	64.1
Gezira	464	32.7
White Nile	18	1.3
Kassala	9	0.6
River Nile	4	0.3
Sennar	7	0.5
Northern	1	0.07
unknown	14	0.98
Total	1427	

In the study six different bird species were involved, table (2).It was apparent that chicken was the most species subjected to diseases (90.89%) as it was greatly reared for commercial purposes. Other species such as Psittasine, parakeet, Guinea fowl & Ostrich were used as pet birds.

Table (2).No. and types of bird species involved in the study.

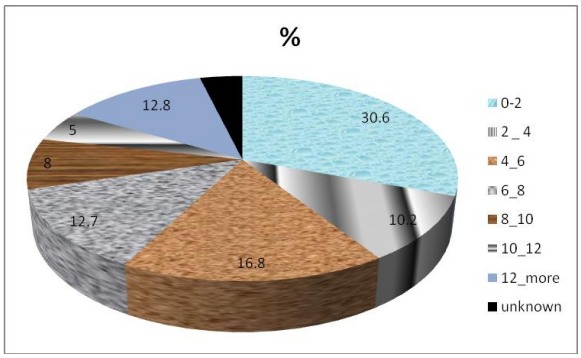
Species	No. of birds submitted	%
Chicken	1297	90.89
Pigeon	32	2.2
Psittasine	2	0.14
Parakeet	1	0.07
Guinea fowl	2	0.14
Ostrich	1	0.07
Unknown	92	6.45
Total	1427	

The chicken species included in this investigation is shown in figure(1).It was found that Hisex and Bovan were the most infected breeds (485 each), followed by Lohman (189), Ross (49), Hubbard (22), Hybro (16), Egyptian (14) and Hyline (10) (figure.1). While individual cases of Faumi, baladi, Neira, Cobb and Omat were reported. The Hisex and Bovan breeds were the most chickens breed reared. The baladi breed of chickens is a indigenous birds that usually raised in small numbers as scavengers in an open yard of which their owners have unwillingness to bring diseased chickens to the laboratory For diagnosis



Figure(1).Chicken breeds included in the study.

The data presented in figure (2), revealed that chicks less than 2 months of age were the most age susceptible to diseases which may lead to high losses in young chicks especially in breeder flocks. Also chicken at point of lay (4-6 month) were found to be highly affected in addition to the stress of production which may increase the risk of mortality.



Figure(2). Ages of birds at risk

The incidence of the diseases was presented in table (3). The highest incidence were reported (24.9%), in the year 2001; where 280 cases were recorded and the lowest percentage (10.7%) was recorded in 2005 (153 cases). The average cases were 238 annually (table 3). The decline in the total numbers samples in 2005 may be due to establishing of other private diagnostic labs in Khartoum State or it may attributed to the unwillingness of the owners to submit the cases to the lab because they started to treat some or common diseases conditions by themselves. A total of 291360 out of 8778235 (33.2%) was the mortality caused by different diseases. The viral diseases were the major cause of high mortality (8.8%), the details were shown in Table (4).

Table (3). Incidence of poultry diseases during 2000-2005.

Year	bacterial	Viral	Parasitic	Mycoplasma	Fungus	Total (%)
2000	91	36	146	6	1	280 (19.6)
2001	116	26	147	67	0	356 (24.9)
2002	66	21	102	10	0	199(13.9)
2003	75	36	75	16	0	202(14.2)
2004	104	27	83	23	0	237(16.6)
2005	66	33	42	11	1	153(10.7)
Total	518	179	595	133	2	1427

Table (4). Total mortality caused by different diseases (2000-2005)

Diseases	Population at risk	Mortality	%
Viral	1280552	113269	8.8
Bacterial	5222893	263746	5
Parasitic	2151790	132545	6.2
Fungal	123000	30050	5.9
Total	8778235	2913610	33.2

Different diseases were studied, 1427 outbreaks were reported, and the details were in figure (3). Bacterial diseases were the most recorded during the study period 2000-2005, followed by parasitic diseases, then viral diseases which lead to high mortality (8.8%) in comparison to other diseases. Resistance to antibiotic that exhibited by bacteria that may explain high incidence of bacterial outbreaks. Fungal diseases were of low prevalence. Nutritional deficiencies were not reported, this may be to due highly educated farmers (Abda and Hassan, 2010).

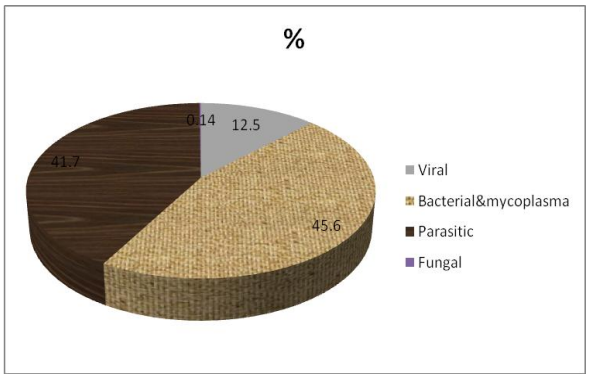


Figure (3). % of incidence of different diseases during 2000-2005.

Table (5) illustrated that Mycoplasma gallisepticum (25.6%), E.coli (25%), Staphylococccus (8.3%) and Klebseilla (11.04%) were the most prevalent bacteria reported in this study.

Table (5). Some of important bacterial diseases out breaks during 2000-2005.

Diseases	No. out break	%
Mg	123	25.6
E.coli	120	25
Staphylococcus	40	8.3
Klebseilla	53	11.04
Shigella	25	5.5
Proteus	22	4.6
Ms	10	2.08
Pseudomonas	18	3.8
Corynebacteria	12	2.5
Listeria	17	3.5
Aeromonas	14	2.9
Streptococcus	13	2.7
Spirochetes	13	2.7
Total	480	

As demonstrated in figure (4), IBD and ND were the most documented viral diseases which were considered as the highly contagious viral diseases causing to high mortalities of poultry in Sudan.

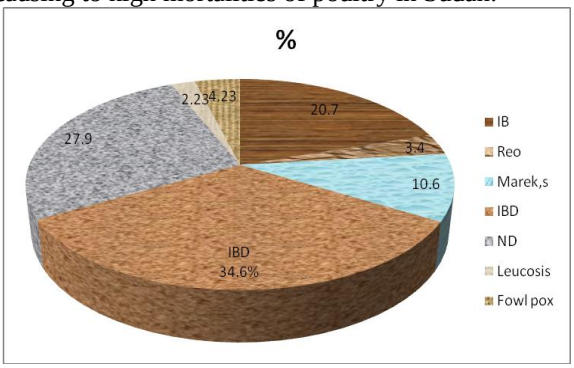


Figure (4). Viral diseases reported in the study

The most parasitic diseases reported were coccidiosis and tape worms **(**figure 5) which reflects bad management in poultry farms. Coccidiosis is a disease of universal importance in poultry production, it causes intestinal tissue damage with resulting interruption of feeding and digestive processes or nutrient absorption, dehydration, blood loss, loss of skin pigmentation and increased susceptibility to other disease agents (Larry et al, 2008). Tape worm infections were important disease because of their severity and adverse effect on egg productivity and prostrated individual deaths in the affected flocks (ElGali and ElHussein, 1995).

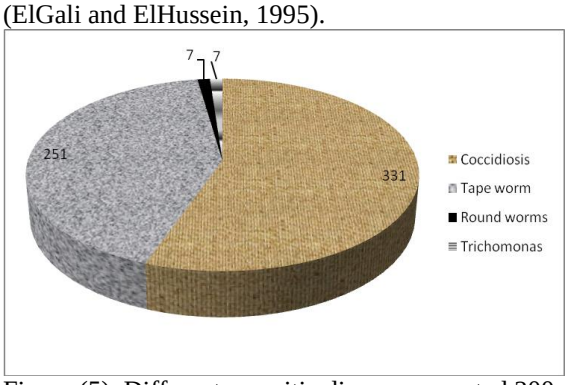


Figure (5). Different parasitic diseases reported 200-2005

It is worth to mention that (41.1%) of diseases were occurred in summer followed by (34.3%) in winter and 24.6% in autumn (Figure 6).

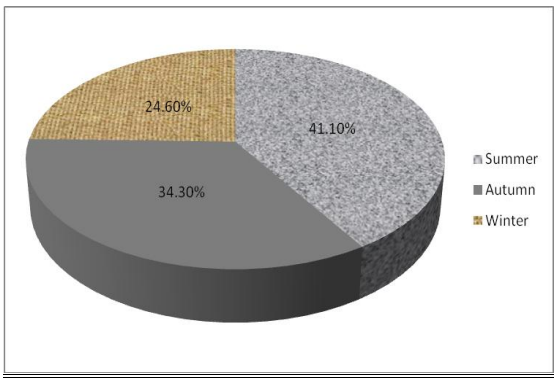


Figure (6). Seasonality occurrence of diseases

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In conclusion, this information will represent important epidemiological criteria for studying poultry diseases and planning research. It is worth mentioning that resistance to antibacterial drugs showed by some bacteria will be a problem in the future.

Extensive extension for poultry owners and producers can improve the industry. More information about poultry diseases in all States of Sudan must be conducted, since these data were concentrated on diseases diagnosed in Khartoum State. More information on poultry species other than chicken, their distributions and susceptibility to infectious agents is recommended.

Corresponding Author:
Dr. Egbal Sidahmed
Department of avian diseases &Diagnosis
Veterinary Research InstitutePO>Box 806, Khartoum Sudan
E-mail: igbalsss@hotmai.lcom

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