RETROSPECTIVE STUDY ON THE PREVALENCE OF TURKEY POX IN BAUCHI METROPOLIS FROM 2010 TO 2017

[1]Mai, H. M.,[1]Ahmad, A.A., [1]Abdullahi, S., [2]Umar, M. B.,[3]Bobbo, A. G.,[1]Sanusi, M. and [1]Kalla, D. J. U.
[1]Department of Animal Production,Abubakar Tafawa Balewa University, Bauchi
[2]Department of Veterinary Anatomy, Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria
[3]Department of Animal Science, ModibboAdamaUniversity, Yola
Corresponding Author's Email:hassanmai@hotmail.com

ABSTRACT
The study was conducted at Area Veterinary Clinic Ran Road Bauchito investigate the prevalence of turkey pox in turkeys from 2010 to 2017. A total of14,596 turkeys were presented, out of which 1,822cases of turkey pox were recorded within the study period. The highest prevalence of 28.3% was observedin 2010and the least (6.4%) in 2013. turkey pox overall monthly prevalence was higher in the month of September and August with 15.4% and 13.4% respectively and the lowestprevalence was recorded in November with 4.8%. In addition,turkey pox overall prevalence was higher in poults/hens than chicks/tomswith 58.9% and 41.1% respectively. Similarly, the overall prevalence was higher in poults/chicksthan hens/tomswith 72% and 28% respectively. Out of the total number of cases recorded during the study period, late rainy season accounted for the highest prevalence of 39.2%, followed by late dry season 26.7%, early dry season 17.3% and early rainy season 16.9%. However, season and sexhave nostatistically significant difference on disease occurrence whereas ageis significant ($p<0.01$). The findings of this study indicate that, turkey pox is an important avian disease affecting turkeys which may decrease their productivity. Therefore, it is recommended thatturkey farmers should be enlightened on methods of prevention and control whichshould include vaccination and use of netted cages/houses to control vectors of the disease.
Key words: Poults, Prevalence,Retrospective,Toms,Turkeypox.

INTRODUCTION
The production and consumption of eggs and poultry meat is increasing worldwide. Over the last quarter of a century, the consumption of eggs has doubled and chicken meat tripled (Jordan and Pattisons, 2001). Poultry production forms an important component of Nigeria's livestock sector as a provider of employment and income. Over 70% of those who keep livestock are reported to keep poultry birds for the production of day old chicks, meat, eggs, and poultry manure for rural, urban and semi-urban populations (Amar-Klemesu and Maxwell, 2000; Eduvie, 2002). Poultry sector is next to ruminants as a source of animal protein supply in Nigeria and accounts for about 25% of local meat production (Ajala and Alli-Balogun, 2004).
There are many underrated, but highly promising poultry species such as turkeys, quails and guinea fowls. Turkey (*Meleagrisgallopavo*) is a type of poultry species with numerous attributes; turkey thrives better under arid conditions, tolerates heat better and has higher quality meat (Yakubu*et al.,* 2013). Currently, turkey production is an aspect of poultry industry whose potentials have not been fully utilized and is one of the most suitable alternative sources of animal protein supply in Nigeria considering the cost of production (Ibe, 1990; Peters *et al.*, 1997).Smith (1990) reported that carcasses of turkeys contained a higher percentage of protein than the carcasses of chickens.
Diseases have been the major constraint in rearing domestic poultry especially in developing countries (Van-Riper and Forrester, 2001). Turkeypoxis one of the most commondiseases in the wild turkey population(Wright *et al.*, 2005). It is caused by turkeypox virus of the genus *Avipoxvirus* under the family *Poxviridae*(Timoney, 1988). Like all avipoxviruses, is transmitted either through skin contact or by arthropods (typically mosquitos) acting as mechanical vectors(Wobeser, 1997).*Avipoxvirus* infections have been reported in over 232 bird species in 23 orders of birds, but most of our knowledge comes from the study of *fowlpox* virus and *canarypox* virus as they are the only species with full genome sequences available (Weli and Tryland, 2011).

Turkey Pox is a worldwide, slow-spreading disease characterized by formation of progressively increasing nodular lesions in part of the unfeathered skin such as head, upper neck and eyelids (cutaneous form) that progresses to thick scab or fibrin necrotic and proliferative lesions in the mucous membrane of the upper respiratory tract, mouth, and oesophagus (diphtheritic form) (Jordan and Gordon, 1982; Docherty *et al*., 1991). A concurrent systemic infection may also occur (Abdu and Musa, 2014).

MATERIALS AND METHODS

Recorded data on cases of turkey pox for eight years (2010-2017) presented to the veterinary clinic Ran Road Bauchi, Bauchi State were considered. The disease was diagnosed based on flock history, clinical signs and post mortem findings. The distribution of the disease based on sex, age, seasons and months of the year were obtained during the study.

RESULTS AND DISCUSSIONS

A total of14,596 turkeys were presented to the veterinary clinic, out of which 1,822cases of turkey pox were recorded within the study period. This gives an average of about 228 cases annually. The year 2010 recorded the highest number of cases 515(28.3%), while the lowest prevalence of 117(6.4%) were recorded in 2013 (Table 1). The results confirmed the high prevalence of turkey pox in the study area. The disease may be exacerbated by other pathogens such as viruses of Newcastle disease, infectious bronchitis and fowlpox, and also *Haemophilusparagallinarum* and *Mycoplasma gallisepticum*. Deficiency of Vitamin A and excess ammonia in the atmosphere may also predispose to severe turkey pox infection (Jordan and Patherson, 1999).

Table 1: Yearly distribution of positive cases of turkey pox in Bauchi metropolis during the eight year period (2010 – 2017)

Year	Number positive	Percentage +ive
2010	515	28.3
2011	222	12.2
2012	181	9.9
2013	117	6.4
2014	153	8.4
2015	194	10.6
2016	214	11.7
2017	226	12.4
Total	**1,822**	**100**

In relation to sex, poults/hens are found to be more infected than chicks/toms with 1074(58.9%) and 748(41.1%) prevalence respectively. This may not be unconnected to the fact that, farmers usually keep high number of poults/hens than chicks/toms in the study area.

Based on age, a total of 1,310 cases were recordedin poults/chickswhich account for (72%) prevalence whereas512(28%)prevalence were recorded in hens/toms.This corresponds to the report of Odoya*et al.* (2006) which reported higher outbreak in young turkeys in VomPlateau State, Nigeria. The high prevalence in young ones could also be associated with the under developed immune system of the young ones which make them more susceptible to the infection than adults.

In relation to the season, the overall prevalence revealed the highest infection in late rainy season with 713 (39.2%), followed by late dry season 487 (26.7%) and early dry season 314(17.3%). The least prevalence was recorded in the early rainy season 308 (16.9%).The monthly distribution of the disease indicates a steady rise from July through Augustand the peak in September. This represents the rainy season when there is high presence of the disease vectors (mosquitoes) responsible for transmitting the disease causing organism to the susceptible hosts (turkeys).This agrees with the findings of Anon (1991) whostated that when mosquitoes are plentiful, transmission within the flock may be rapid. Furthermore, in another study,Odoya*et al*. (2006) reported the outbreak of the turkey

pox inVom, Plateau State, Nigeria in the month of June which also indicated the highoccurrence of the disease in the rainy season.In this study,there was no significant difference observed between the prevalenceof turkey poxwith sex but with ageat $p<0.01$.

CONCLUSIONS AND RECOMMENDATIONS

The study showed that turkey pox is a major constraint affecting turkey production in Bauchi metropolis causing economic losses by reducing productivity, predisposing affected birds to secondary infections; attract treatment cost thereby increasing cost of production.Birds of all sexes and ages are susceptible to the infection. It is recommended that control measuresagainst mosquitoes should be adapted as the potential preventivemeasure.Fowl pox vaccine is the most common vaccine used against the infection in Nigeria. However, development of turkey pox vaccine from turkey pox virusis strongly recommended for effective prevention of the disease.

REFERENCES

Abdu, P. A. and Musa, U. (2014).Textbook of Avian Medicine.*P.A. Ndahi Press Zaria, Nigeria*, 94-96.

Ajala, M.K. and AlliBalogun, J.K. (2004) Economics of rabbit production in Zaria, Kaduna state,Nigeria. *Trop. J. Anim. Sci.*,**7:**1-10.

Amar-Klemesu, M. and Maxwell, D. (2000). Accra: Urban Agriculture as an Asset Strategy. In: Supplementary Income and Diets, Bakker, N., M. Dubbeling, S. Gundel, U.S. Koschella and H. de Zeeuw (Eds.). *Growing Cities, Growing Food, Havana, Cuba,*Pp234-236.

Anon (1991).Merk Veterinary Manual.*Merck and Con Inc.* USA,p. 1625-1626.

Docherty, D. E., Long, R. I., Flickinger, E. L. and Locke, L. N. (1991) Isolation of poxvirus from debilitating cutaneous lesions on four immature grackles (Quiscalus sp.). *Avia. Dis.*,**1**:244-7.

Eduvie, L.O. (2002). Poultry production as an important componenent of Nigeria's livestock subsector.*A training manual on national training Workshop on Poultry production in Nigeria in NAPRI, ABU, Shika, Zaria, Nigeria*.

Ibe, S.N. (1990) Utilizing local poultry genetic resources in Nigeria proc. *4th World Congress on Genetics Applied to Livestock, Edinburgh Scotland*.Pp 51-53.

Jordan, F.T.W. and Gordon, R.F. (1982).Poultry Disease 2nd edition *BaillitereTindedCasset Ltd*,p.119.

Jordan, F.T.W. and Patherson M. (1999).Poulrty Disease. 4th edition.*W.B Sanders Company Ltd*, p.171– 172.

Jordan, F.T.W., Pattison, M., Saunders, W.B. (2001).*Poultry.Diseases*.,1996 4th and 5th edition.

Odoya. E.M., Abegunde, A., Agyogbo, B.G., Omotainse, S.O., Gwankat, E. and Okpara, U.G. (2006). Outbreak of turkey Pox Disease in Fowl Pox vaccinated Poults in Vom Plateau State of Nigeria. *Afr.J. Clin. Exp. Microbiol*.,**7**(2): 136-138.

Peters, S.O., Ikeobi, C.O.N. and Bamkole, D.D. (1997) Smaller holder local turkey Production in Ogun State, Nigeria. In: Sonaiya, E.B. (Ed). Issues in Family Poultry Development Research. Proceedings of an international workshop held in at M'Bour Senegal. Published by the *International Network for Family Poultry Development Department of Animal Science*.ObafemiAwolowo University Ile-Ife Nigeria, Pp. 308.

Smith, A.J. (1990). Poultry.The Tropical Agriculturist series.*The Macmillian Press Ltd, London*.

Timoney, John Francis (1988), Hagan and Bruner's Microbiology and Infectious Diseases of Domestic Animals, *Cornell University Press*, ISBN 978-0-8014-1896-9.

Van-Riper, C.,and Scott, J.M. (2001).Limiting factors affecting Hawaiian native birds. In Studies in Avian Biology,Vol. 22, J. M. Scott, S. Conant, and C. van Riper III (eds.). Allen Press, Lawrence, Kansas, U.S.A., Pp. 221–233.

Weli, Simon C. andTryland, Morten (2011). "Avipoxviruses: Infection biology and their use as vaccine vectors". *Virol.J.*,**8**: 49.

Wobeser, Gary, A. (1997), Diseases of Wild Waterfowl, *Springer*, p. 50, ISBN 978-0-306-45590-2.

Wright, E. J.,Nayar, J. K. and Forrester, D. J. (2005). "Interactive effects of turkeypox virus and *Plasmodium hermani* on turkeypoults". *J. Wildl. Dis*., **41** (1): 141–8.

Yakubu, A, Abimuku, H.K., Musa-Azara, I.S., Idahor, K.O., Akinsola, O.M. (2013).Assessment of flock structure, preference in selection and traits of economic importance for domestic turkey (*Meleagrisgallopavo*) genetic resources in Nasarawa State,Nigeria.*J. Agric. Ext. Rural Dev.*, **25** (18).www.Irrd.org/Irrd25/1/yaku25018.htm.