

Case Report

RECURRENT FOWL TYPHOID: Case Reports

SA'IDU^{1*}, L., WAZIRI², I.M., WAKAWA², A.M., RAJI³, A.M. and ABDU¹, P.A.

¹Veterinary Teaching Hospital, ²Department of Veterinary Surgery and Medicine,
³Department of Veterinary Pathology and Microbiology,
Ahmadu Bello University, Zaria, Nigeria

*Correspondence E-mail: lasawa60@yahoo.com; Tel: +234803 4504097

INTRODUCTION

Recurrent outbreaks of fowl typhoid (FT) in two poultry farms are hereby reported. A total of over 160 and 10 live birds from a flock of 7000 layers and a flock of 400 layers from a commercial and a backyard farm with history of sudden mortality were submitted to the Poultry Health Clinic of Veterinary Teaching Hospital, Ahmadu Bello University (VTH ABU), Zaria for diagnosis. Clinical signs (CS) recorded were: yellowish diarrhea, pale combs and wattles, low but persistent mortality with either a severe drop or normal egg production. The two farms were heavily infested by rats. The post mortem (PM) lesions observed were: enlarged friable and discoloured liver (Bronze or Greenish), enlarged and mottled spleen with necrotic foci, Misshapened and pedunculated ovarian follicles Amino glycosides and flouroquinolones were administered prior to presentation. *Salmonella gallinarum* (*S. gallinarum*) and *Escherichia coli* (*E. coli*) were consistently isolated from the livers. FT has been a major problem in poultry producing areas all over the world. However the disease has been eradicated in many countries (OIE, 2005, Simons, 1997). FT is responsible for serious economic losses due to high mortality, decrease or total loss in egg production and the high cost of treatment (Simon, 1997). Transmission can be vertical or horizontal by direct contact with clinically sick bird or recovered carriers, contaminated equipments, feed, litter, personnel and rodents (Shiva Prasad, 1997). Depopulation of the affected flock is usually recommended especially in breeders, However commercial laying flocks may be treated with effective drugs (Simon, 1997). Various drugs and methods tried in commercial flocks often reduce the morbidity and mortality but usually the disease reoccur some days after withdrawal of the drug with resultant higher mortality and drop in egg production (Shivaprasand, 1997). Appropriate biosecurity and vaccination with live 9R *S. gallinarum* bacterin during rearing were suggested as preventive measures. Bacterial diseases were reported to be the most common non viral causes of infections in birds around Zaria (Abdullahi *et al.*, 1992). Also most reproductive abnormalities in fowls were due to bacterial organism (Abdu *et al.*, 2000). In recent years FT is commonly reported in poultry farms in and around Zaria. This paper reports recurrent fowl typhoid in a commercial and backyard poultry farms.

KEY WORDS: Fowl typhoid, Layers, Mortality, Drugs

CASE REPORTS

CASE 1

This case involved a backyard poultry farm at Kongo, Zaria Nigeria. The flock size was 400 and the birds were 12 month old. The birds were being treated with Chloramphenicol prior to presentation to the Poultry Health Clinic of the VTH ABU Zaria Nigeria on the 18th of May 2007.

The major complaint at the time of presentation was sudden death. A month later (18th June 2007) the farmer complained of mortality in the same flock. This time the birds were being treated with Neoceryl[®] (Streptomycin sulphate, Neomycine Sulphate, oxytetracycline and Erythromycin) and Aminototal[®] (Multivitamins, Minerals and Amino acids). A month later (18th July 2007), the farmer reported persistent mortality in the flock. Two

weeks later (1st August 2007). The farmer reported to the clinic with the same history as at 18th July. In addition the farmer complained of drop in egg production from 70% to 50% and the birds were treated with Terramycin Long acting® (oxytetracycline hydrochloride 20%) twice 3 days apart prior to presentation.

The CS seen on the days of presentations were paleness of combs and wattles, dropped wings and greenish diarrhea. The walls of the pen were made from mud bricks and old zinc and the pen is poorly ventilated and the birds are on deep litter. In addition to the layers, the farmer also keeps some turkeys semi intensively. And there is heavy rat infestation around the house. The farmer reported that the population of rats was reduced when a cat was introduced into the house.

The PM lesions observed were: enlarged friable and greenish discolouration of the liver, in some birds necrotic foci were seen in the liver as well as bronze discolouration of the liver, some of the livers were streaked. The spleens and the kidneys were enlarged and congested. The ovarian follicles were misshapened and pedunculated and egg yolk peritonitis was seen in some of the birds examined.

Microbiological examination

After PM examination the whole liver was submitted to microbiology laboratory for bacterial isolation, identification and drug sensitivity test. Swabs of the liver were streaked on blood and MacConkey agars and incubated at 37°C for 24 hours. Lactose fermenting organisms were identified as *E. coli*. The non lactose fermenting organisms were inoculated onto the mortality, triple sugar iron (TSI), urease and indole media and any organism that was non motile, produced Alkaline and H₂S on TSI, and urea and indole negative was identified on *S. gallinarum*. *S. gallinarum* and *E. coli* were consistently isolated from the livers of dead birds.

Antibiotic sensitivity test

The drug sensitivity patterns of the *S. gallinarum* and *E. coli* were determined using the Bauer Kirby disk diffusion method (Bauer et. al., 1966). The sensitivity of the organism to the following drugs were tested: Septrin, Chloramphenicol, Sparfloxacin, Ciprofloxacin, Amoxicillin, Augmentin, Gentamicin, Pefloxacin, Tarivid and Streptomycin. The antibiotic discs were obtained from Maxicare Medical Laboratory, Nigeria. Interpretation was according to criteria recommended by the National Committee for Clinical Laboratory Standards (NCCLS, 1993). The organisms were sensitive to: Streptomycin, Pefloxacin, Ciprofloxacin and Gentamicin the antimicrobial susceptibility testing showed that the isolates were sensitive to streptomycin, pefloxacin, ciprofloxacin, tarivid and gentamicin.

Treatment

On the 15th of May the farmer was advised to treat the birds with Quintox® (Norfloxacin, 200mg/ml) for 7 days. On 18th of June the farmer was advised to continue with Chloramphenicol for 5 days. On the 16th of July the farmer was advised to treat the birds with Furaladone for 5 days and on the 1st of August the farmer was advised to treat the birds with Conflox® (Enrofloxacin) for 5 days.

CASE 2

This case involved a commercial farm located along Zaria-Jos road, Nigeria. The total number of birds in the farm was 7000 consisting of 2000, 15 week old pullets, 3000, 32 week old layers and 2000, 52 week old layers. All the flocks were vaccinated against fowl typhoid. The condition was first reported to the Poultry Health Clinic VTH ABU Zaria, on the 8th of May 2007, with a major complaint of persistent mortality for the past week. It was also reported that an average of 3 birds were lost on daily basis and about 2% of the flock was sick. The birds were being treated with Furaladone and Vitalyte® (Multivitamins, minerals and Amino acids). Two month (7th August 2007) later the farm presented some dead

birds from the flock of 15 week old pullets. The condition was noticed 3 days ago and 60 birds were lost within the 3days. Six days later (13th August 2007) the farm reported that the mortality in the 15 week old pullets was reduced but the birds are still dying despite treatment with Conflux[®] (Enrofloxacin). On the 14th of August 2007 the farm reported sickness and mortality in the 52 week old layers. The condition was noticed the previous week and 10 birds died and 6 were sick. The birds were on treatment with Conflox[®] (Enrofloxacin). Two weeks later (27th August 2007). The farm reported high mortality in the 52 week old layers and 80 birds died within 2 weeks and 77 were sick but the egg production was normal.

The CS on the days of presentation were lost of weight, dropped wings, ruffled feathers, yellowish diarrhea, weakness, drop in feed consumption, pale combs and wattles and dullness. All the birds were on battery cages including the 15 week old pullets. The farm is isolated from other poultry farms. The poultry pens were heavily infested by rats and the faeces of rats were present in the feeders of the cages.

The PM lesions recorded were similar to those in case 1 in addition there were necrotic foci which may be haemorrhagic in the livers (Plates 1 and 2). In some spleens there were necrotic foci in addition to the congestion (Plate 2). The lungs were congested. The ovarian follicles were misshapened and pedunculated (Plate 3). In some birds there were haemorrhages in the duodenum, jejunum and caecal tonsils.



Plate 1: Greenish discoloration with patchy areas of haemorrhages on the liver of a 52 week-old Layer diagnosed of Fowl typhoid



PLATE 2: Congested and enlarged liver and spleen in a 52 week-old layer diagnosed of fowl typhoid



PLATE 3: Misshapened ovarian follicles in a 52 week-old layer diagnosed of fowl typhoid

Microbiological Examination

S. gallinarum and *E. coli* were consistently isolated from the livers of dead birds as in case 1.

Drug Sensitivity Test

Drug sensitivity test was conducted as in case 1 and the organisms were sensitive to: Ciprofloxacin, Tarivid, Streptomycin, Refloxacin and Gentamicin

Treatment

The farmer was advised to treat the birds with Quintox® (Norfloxacin, 200mg/ml) on the 8th of May, Conflox® (Enrofloxacin 100mg/ml) was recommended for 5 days on 7th and for 7 days on 13th August. Enrovet® (Enrofloxacin 100mg/ml) for 7 days was also prescribed on 14th and 27th of August.

ADVICE TO THE FARMERS

Both farmers were advised to sanitize the water used in watering the birds on a daily basis with aquaclean control rats on their farms and provide multivitamins to the birds.

DISCUSSION AND CONCLUSION

The cases reported here were recurrent episodes of FT in a backyard and a commercial poultry farm despite treatment with various drugs. This

is because it is difficult to eliminate *Salmonella* organisms from an infected farm irrespective of cleaning and disinfection (Duguid and North, 1991). It is important to note that in these cases *E. coli* was always isolated in conjunction with *S. gallinarum*. The presence of *E. coli* may worsen the outcome of the disease because the organism is capable of causing diseases in young and adult birds. FT is mainly a disease of adult birds (Shivaprasand, 1997) but in this report FT was recorded in 15 week old birds from the commercial poultry farm. This may be as a result of transmission from dead birds because infected birds are reported to be a means of perpetuation and transmission of the organism, other likely means of transmission of the organism to the young birds may be contamination from contaminated feed, personnel and rodents as reported by Baggesen *et al.*, (1992). It is important to note that these farms are heavily infested with rats, particularly the commercial farm where faeces of the rat were noticed in the feeders.

The clinical signs seen in these cases are similar to those reported by earlier workers (Chima and Ogbobu, 1998). The post mortem lesions seen in these cases were also similar to those reported by Chima and Ogbobu, (1998).

The farm treated their birds with antibiotics in between each period of presentation to the clinic. This habit is capable of leading to drug resistance as reported by Karyogin, (1964). In addition underdosing in complete dose regimen may lead to treatment failures as observed in the present investigation.

The farmers were advised to institute rat control programmes to reduce the chances of spread of the disease by contaminated rats. To reduce the chances of infection by contaminated water the farmers are advised to sanitize the drinking water of the birds.

It was concluded from this study that FT can cause serious economic losses to poultry farmers and the disease could be effectively controlled by

treatment followed by culling of affected birds.

REFERENCES

- ABDUL, P.A. SA'IDU, L., DANDAM, K.P. and RUWAAN, J.S. (2002): Some Reproductive abnormalities in domestic fowls. *Nig. J. Anim Prod.*, **29**(1):94-101.
- ABDULLAHI, S.U., ABDU, P.A., IBRAHIM, M.A., GEORGE, J. B. D., SA'IDU, L., ADEKEYE, J. O. and KAZEEM, H.M.(1992): Incidence of diseases of poultry caused by non-viral infectious agents in Zaria, Nigeria. *World Poultry Congress*, Amsterdam, Netherlands 20th 24th September 1992
- BAGGESEN, D.L., OLSEN, J.E. and BISGAARD, M (1992): Plasmid profiles and phage types of *Salmonella typhimurium*. Isolated from successive flocks in chickens on three parent stock farms. *Avian Patho.*, **21**:509-597.
- BAUER, A. M., KIRBY, W.M., M.SHERRIS, J. C. and TURK, M. (1966): Antibiotic susceptibility testing by a standardized single disc Method. *Ame. Jour. of Clin. Patho.*, **45**:493-496.
- CHIMA, J.C. and OGBOGU, A. (1998): Chronic fowl typhoid infection in a commercial poultry farm *Nig. Vet. Jour.*, **19**:1-4.
- DUGUID, J.P. and NORTH, R.A.E. (1991): Eggs and *Salmonella* food poisoning an evaluation. *J. Med. Microbiol.*, **34**:65-75.
- KARYAGIN, V.W. (1964): Development of Resistance of *Salmonella pullorum* 1. to biomycine II. to furazolidone. *Nauchin Tr*; 31-49.
- NATIONAL COMMITTEE FOR CLINICAL STANDARDS.(1993): Performance standards for antimicrobial disk susceptibility test. Approved standard M2 A 5. 5th edition NCCLS Villanova;9.
- SARKISON, A.K.G. and TRISHKINA, E.T. (1966): Antibiotic sensitivity of *Salmonella pullorum* isolated from chicks on farms where antibiotics have been used over a long period. *Trusses Institute Eksp Vet.*, **32**:224-230.
- SIMON, S. (1997): Bacterial Diseases. The poultry disease hand book. published by the American soybean Association. Singapore; 25 -60.
- SMITH, H.W., TURKER, J.F. and LOVELL, M. (1981): Furazolidone resistance in *Salmonella gallinarum*: The relationship between in vitro and vivo determinations of resistance. *J. Hyg. (Camb)*, **87**:71-81.
- SHIVAPRASAD, A.L. (1997): Pullorum Disease and Fowl typhoid. In: Diseases of oultry. 7th edition. B.W Calnek, H.J. Barnes, C.W. Beard, R L. McDougald and Y. S. Saif, Eds. Iowa State University Press, Ames, Iowa. USA; 82-96