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A Retrospective Study of the Incidence and Vaccination of Contagious Bovine Pleuropneumonia in Cattle in Kogi State Nigeria

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Abstract

A study of the contagious bovine pleuro pneumonia pandemic that affected cattle in farms and herds in Kogi State, Nigeria, between July and September of 2018. After farmers and herders reported symptoms of possible outbreaks in their herds, blood and lung samples were obtained, and several herds underwent clinical examinations. The blood samples and lung lesions were sent to the Mycoplasma laboratory of the National Veterinary Research Institute Vom for confirmation testing. During this study, considerations were made on diagnosis, vaccination, treatment, and control strategies and plans of CBPP. An extensive vaccination program was undertaken by the State Government in conjunction with the Kogi State Ministry of Agriculture and Rural Development to vaccinate as much cattle as possible. Vaccination here was used mainly as a control measure after outbreaks rather than a preventive measure.

Keywords: Contagious bovine pleuropneumonia, Kogi, vaccination, control strategies.

Introduction

Contagious Bovine Pleuro pneumonia is a highly infectious disease of cattle caused by Mycoplasma *mycoides mycoides*. It is transmitted by direct or close contact between infected cattle and susceptible animals, and remains an important constraint

to cattle production in many sub-Saharan African countries (Fischer et al., 2012). Due to its high economic losses in endemic regions, OIE declared CBPP one of the most serious contagious animal diseases and listed it in the group of notifiable animal diseases of high socio economic impact and is also regarded as one of the major Trans boundary animal diseases TAD (FAO 2002). Although Cattle production in Kogi state is a major economic activity, data on the prevalence of CBPP in the state is sparse. Most challenges of this disease is the attitude of farmers who hardly report cases until too late, but resort to self medication of their herd with antibiotics, inadequate funding on cattle annual mass vaccination program, lack of rapid on farm screening tests to permit Sero monitoring and refusal of some farmers to allow vaccination caused by the fear of vaccinal cellulites.

In Nigeria, efforts made for the eradication of CBPP involves vaccination with T1 vaccines backed up with abattoir surveillance; test and slaughter policy, Cattle movement control, treatment and quarantine (Radostits et al., 2000).The OIE recomends the T1 vaccine for vaccination against CBPP, it is generally accepted that the protection offered by the vaccine wanes after 12 months (Wesonga and Thiacourt 2000) but may last for more than one year (Nkando et. al 2011). However, to archive a herd immunity level of 80% and above for adequate CBPP control, there is a necessity for biannual vaccination as primal vaccination ends up in only 67% protection rate at three months while revaccination at six months leads to 95.5% protection rate (Wesonga 2011 and Thiaucourt, 2004). The vaccine is sufficiently avirulent but can cause severe post-vaccinal adverse reactions in some breeds (Teshale et al., 2015).

Following the reports of suspected cases of CBPP by the Fulani pastoralists in the State, a state wide verification and sample collection was embarked on. Symptoms including cough, exhaustion with little exercise, difficulty in breathing, fever, reluctance to move, standing with heads extended, mouth open, protruding tongue, turned out elbows, frothy oral discharges, emaciation, swollen and painful joints were observed after clinical examination of the cattle. Affected animals were isolated from likely healthy ones. The farmers complained of over a hundred cattle lost already to the disease and had already been self medicating their cattle with antibiotics so most of the cattle had become carriers spreading the disease to healthy ones. Blood samples were taken for confirmation.

The measurement of knowledge, attitudes, perceptions, and practices in control of CBPP is important for generating information that can be used in policy advice (Thomson, 2005). Although CBPP has been established as an important disease in sub-Saharan Africa, information on pastoralist knowledge, attitudes and practices in CBPP control is sparse, and this study intends to shut such gaps.

MATERIALS AND METHODS

Study area

The Lokoja local Government Area was Chosen as the study site mainly because, the first reported suspected outbreak was recorded in Gida Shagari Crusher and Zango

Kaduna Junction. This study was conducted in Kogi State of Nigeria. Kogi State lies between latitude 9° 10' 56" N and longitude, 7° 28' 28" E. Geographically, Kogi State is within the tropical Guinean forest–savanna mosaic eco region. The estimated number of cattle in Kogi State is 70,000 (Federal Ministry of Agriculture and Rural Development Kogi state, 2021) as opposed to the total 16.3 million estimated cattle population in Nigeria (Ikhatua, 2011).

Kogi state also known as the confluence state has 21 local government areas with four agricultural zones namely Aiyetoro-Gbede (A), Anyigba (B), Koton-karfe (C) and Alloma (D).

Sample collection

The blood sample was taken randomly from most of the cattle that were not vaccinated against CBPP in the past 6 months and apparently sick animals.

Blood samples were collected and then packed on ice and transported to the Mycoplasma laboratory of the National Veterinary Research Institute Vom for serological examination. Serological analysis was performed using IDEXX CBPP antibody Test.

CBPP gross lesions (hepatisation, marbling, nodulation of lungs were recorded during sample collection. Collected samples were identified and transported on ice to National Veterinary research institute Laboratory for analysis.

DISCUSSION AND RESULTS

Results

Before the mass vaccination was to take place, most herders and farmers were invited for focus group discussions. They expressed reservations about the effectiveness of the treatment because most had tried treating the outbreak with antibiotics and still the disease kept spreading or the disease only subsides and come back after a few weeks.

In the focus group discussions, herders 90% agreed that vaccination was the solution for CBPP and therefore there was high demand for the vaccine during the course of the outbreak. However, a few others explained that CBPP vaccination was unpopular when there was no obvious threat of outbreaks, due to fear of adverse post-vaccination reactions.

Also important to the herders was the lack of the vaccine and the ability to purchase it because it was not just sold to anyone and could only be gotten through the Government program.

Table 1: vaccination of cattle against CBPP in Agricultural zone A of Kogi State North Central Nigeria

LOCATION	LOCAL GOVERNMENT AREA	NUMBER OF CATTLE VACCINATED	PERCENTAGE ZONAL VACCINATION
Ayetoro Gbede	Ijumu LGA	2500	23. 80
Iya Gbede	Ijumu LGA	2000	19.04
Abobo and	Okehi LGA	2000	19.04

obehira			
Osokososko	Kabba Bunnu LGA	4000	38.09
total		10500	

Table 2: vaccination of cattle against CBPP in Agricultural zone B of Kogi State North Central Nigeria

LOCATION	LOCAL GOVERNMENT AREA	NUMBER OF CATTLE VACCINATED	PERCENTAGE ZONAL VACCINATION
Idah	Idah LGA	2000	23.52
Ochadamu	Anyagba Dekina LGA	4000	47.05
Egabada	Dekina LGA	2500	29.41
Total		8500	

Table 3: vaccination of cattle against CBPP in Agricultural zone C of Kogi State North Central Nigeria

LOCATION	LOCAL GOVERNMENT AREA	NUMBER OF CATTLE VACCINATED	PERCENTAGE ZONAL VACCINATION
Crusher (Lokoja LGA), Zango Kaduna junction	Adavi L G A	3500	10.44
GRA Lokoja, GADA Shagari, NNPC behind Felele	Lokoja LGA	3500	10.44
GADA Shagari Lokoja, Bakumba	Lokoja LGA	3000	8.95
CRusher Phase 2, Felele	Lokoja LGA	2000	5.97
Ogbabo, Oworo Lokoja LGA	Lokoja LGA	3500	10.44
Ogbabo, Oworo	Lokoja LGA	3000	8.95
Gegu Baki,	Koto Karfi LGA	4300	12. 83
Ajaokuta, Adogo	Ajaokuta L G A	3000	8.95
Upper Zango	Adavi LGA	1700	5.07
Owara Community	Lokoja LGA	3500	10.44
Asewa Lokoja	Lokoja LGA	1000	2.98
Phase 2 Ajaokuta	Ajaokuta LGA	1500	4.47
Asewa Lokoja	Lokoja LGA	3000	8.95
Total		33500	

Table 4: vaccination of cattle against CBPP in Agricultural zone D of Kogi State North Central Nigeria

LOCATION	LOCAL GOVERNMENT AREA	NUMBER OF CATTLE VACCINATED	PERCENTAGE ZONAL VACCINATION
Ejule and Aloma Ofu	Aloma Ofu LGA	3500	50.00

Obajana	Alloma LGA	3500	50.00
Total		7000	

Kogi state has four agricultural zones namely Aiyetoro-Gbede (A), Anyigba (B), Koton-karfe (C) and Alloma (D). From the tables 1, 2, 3 and 4, we can see that agricultural zone C (Koton-karfe) had the highest numbers of vaccination of cattle with 33500 doses administered followed by agricultural zone A (Aiyetoro-Gbede) wth 10500 doses administered. Zone (B), Anyigba were administered a total of 8500 as opposed to Zone D (Alloma) which was administered 7000 doses.

Discussion

The herders agreed the solution to CBPP was vaccination , but a large number were not vaccinating their animals regularly against CBPP mainly due to unavailability of the vaccine and will frequently hold out against CBPP vaccination alone except when there is an outbreak. .

Most herdsmen or farmers resort to self-help or the use of quacks in the management of the disease (Ankeli et al., 2017). Similarly, there is an indiscriminate use of antibiotics by herdsmen/Farmers for the treatment of CBPP which eventually leads to chronic carriers of this disease thereby increasing the spread of CBPP to susceptible animals in the farm or herd. (Egwu et al 2012) Farmers rarely report cases of CBPP but resort to treatment with antibiotics like any other bacteria disease (Chima et al., 2001). Unfortunately, there is usually the fear of reporting diseases which can seriously affect control and the need to create awareness within the herders and farmers is beneficial in the reporting of CBPP. Also response to CBPP outbreaks is not always swift which leads to repeated self-treatment of cases with antimicrobials in the herds.

Most importantly CBPP prevention methods should be seen as a priority and programs made to be educate the farmers and herders about the importance of monitoring, vaccination and its effects and also on the correct use of antimicrobials in the treatment of CBPP.

Participatory Epidemiology P.E

Because most farmers and herders are very mobile and move their flocks around for better grazing deep into the forests, it is challenging to conduct surveillance and study of CBPP and other diseases in these farms and flocks. In these instances , the herders/ pastoralists serve as sources of information on livestock diseases, one useful approach for disease identification in rural hard to reach areas of Africa is by the use of P.E techniques(March et al., 2000). This uses participatory rural appraisal tools to collect qualitative epidemiological data through observations, existing Knowledge and

traditional Oral history to improve on understanding animal health issues. (Catley A 2006).

P.E is aware that the local farmers or herders have a wealth of in-depth knowledge and adequate descriptions of the majority of infectious diseases that impair socioeconomic livelihoods and well-being, and they can be used to describe clinical indications in a way that is appropriate.

Conclusions

Contagious bovine pleuropneumonia currently poses a number of challenges to the livestock industry and socio-economic welfare of pastoralists in Kogi State. These challenges cover not only the epidemiological features but also several significant methodological gaps that concern the diagnostic tools and control strategies. Therefore if primary endemic areas and predisposing factors influencing its occurrence are thoroughly identified effective disease control in Kogi State can be attained.

Additionally the use of Participatory epidemiological tools in conjunction with traditional diagnostic procedures will enhance CBPP detection in isolated rural / pastoral areas support disease management efforts and ensure food security in Kogi State and throughout Nigeria.

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