

COMPARATIVE STUDY BETWEEN THE CASES AND DEATHS OF ANTHRAX IN CATTLE, SHEEP AND GOATS FROM 1997 TO 2016 IN THE REPUBLIC OF GUINEA

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ABSTRACT

The objective of this research is to make a comparative study between the cases of anthrax and the death of cattle, sheep and goats from 1997 to 2016 in the Republic of Guinea. The results obtained show the permanent frequency of sick and dead cattle in the areas visited with a significant difference between (a) and (c); (b) and (d); (ab) and (cd); (bc) and (de) but there is no significant difference between (a) and (ab); (b) and (bc); (c) and (cd); (d) and (de). Also, the number of sick cattle is not proportional to the number of dead cattle. Which means that among the sick there were treated and healed. In sheep, the disease cases between 2002 and 2006 are higher than in other years, this is due to the low immunization coverage and the poor application of sanitation measures and the improper management of corpses and other waste in affected areas. The number of deaths relative to the number of cases of disease in goats in the period 2002-2006 has increased remarkably. The lack of awareness of the symptoms of the disease by farmers and the lack of means to treat their animals must be at the root of this situation. Morbidity and mortality rates vary according to the years of observation, the highest peak was observed during the interval 1997 - 2001 while the lowest was recorded in 2012 - 2016. This indicates constantly improving vaccination coverage and strengthening the vigilance of agents of the Animal Disease Network in Guinea in endemic areas.

KEYWORDS: Comparative, sick, dead, cattle, sheep and goats.

INTRODUCTION

Anthrax is a disease very well known to farmers and breeders in our country. It is still endemic and sporadic across the different regions of the country despite the efforts of the veterinary and livestock services. This situation is very strongly linked to the nature of the pathogen (*Bacillus anthracis*), the reservoir of the pathogen and the farming method used.^[1] A very deadly, cosmopolitan disease common to several animal species, anthrax is very difficult to eradicate due to the biology of the pathogen. Van der Goot G., explains that the bacillus responsible for anthrax can continue to kill sick organisms, sometimes two weeks after the last signs of bacteria have disappeared.^[2,3] Because of the enzootic nature of this disease, the level of socio-economic development and the farming method practiced, it is obvious that anthrax is a public health problem in Guinea. Often linked to the context of rural poverty and the weakness of veterinary services in their fight against it, anthrax is common in humans and animals. It occurs

particularly in West Africa, causing significant damage.^[4,5]

Livestock is the second activity in the rural world and affects around 300 000 families. It is a growth sector that contributes substantially to food security and the fight against poverty. It provides income to 30% of the Guinean rural population and contributes 5.6% to the national Gross Domestic Product (GDP). The census of the national herd in 2017 gave: cattle mainly of the N'Dama race 6 407 000, sheep and goats 459 400. These species, made up of local breeds, are very hardy and adapted to their environment. Their diet is based on rich and varied natural pastures of around 70000 km² with almost 350 fodder species. Pig farming has 500000 heads of semi-improved breed. The poultry population is estimated at 28 400 000 poultry of local varieties in traditional farms and 1 500 000 hens of improved strains in semi-intensive poultry farms.^[6]

This animal production is generally faced with health problems which constitute a major obstacle to the development of the sector. Animal diseases contribute more than 20% to production and productivity losses. From this observation emanates the objective of this research, which consists in making a comparative study between the cases of anthrax and death of cattle, sheep and goats from 1997 to 2016 in Guinea. To this end, we could get a better idea of the impact of the disease on animals, and also elucidate the properties of the infectious agent (especially pathogens).

Among the health problems that beset livestock in Guinea, anthrax, mainly because of its zoonotic nature, is positioned as one of the most deadly and dangerous diseases from an economic and social point of view.

MATERIAL

The study consisted of identifying and documenting all the cases of anthrax reported in Guinea, during the period from 1997 to 2016. The epidemiological information collection material is made up of archives from animal husbandry services, clinics and veterinary surgeries, as well as suspicion and sample investigation sheets from the Animal Disease Network in Guinea. The material for collecting clinical and necrotic information consists of material for the removal of corpses.

The epidemiological information collected was obtained using investigation or suspicion cards accompanied by samples and sample cards. These epidemiological data were compared with those obtained using monthly files made by livestock agents, veterinarians and annual reports of the Prefectural Directorates of Livestock as

well as Statistics from the Epidemiological Surveillance Service of the National Directorate of the Veterinary Services.^[7,8]

METHODS

Clinical suspicions and samples were taken according to the guide or monitoring protocol and were recorded on a suspicion sheet and a sample sheet. A suspicion sheet contains information on the locality, the species affected, the transhumance axis when it comes to transhumant, the numbers of animals from a farm affected, the number of dead and sick, symptoms and lesions observed by the technical agent or reported by the breeder concerned, as well as information on watering points and blood-sucking insects present in the locality.

The sample card, for its part, contains information on the identification of the place, the breeder, the species affected and especially the identification of the animal sampled (age, sex, symptoms or lesions observed as well as the nature of the samples taken). The epidemiological data collected made it possible to calculate the morbidity and mortality rates in ruminants according to the observation years from 1997 to 2016. The processing of the statistical data was carried out using the following software: IBM SPSS Statistics Data editor and 1-factor ANOVA.

RESULTS AND DISCUSSION

Results

The results obtained during the survey period are represented by the histograms of figures 1, 2, 3 and 4 for a good interpretation.

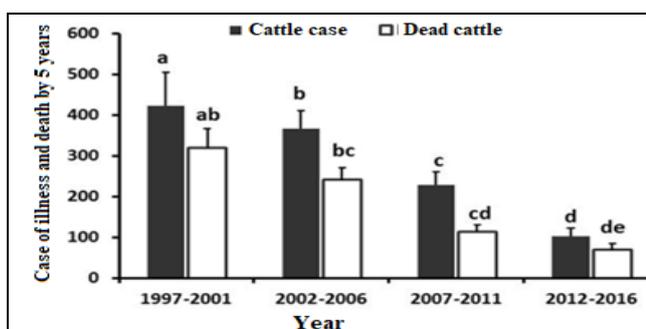


Figure 1: Comparative study between anthrax cases and cattle deaths from 1997 to 2016

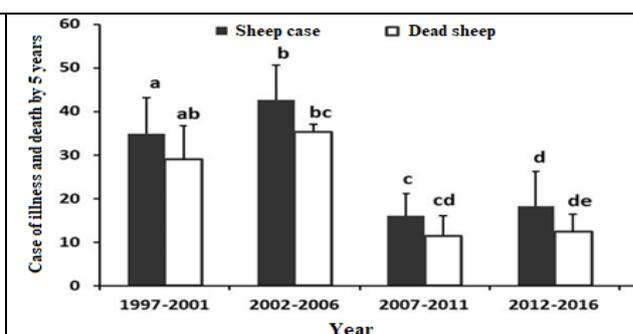


Figure 2: Comparative study between cases of illness and death of sheep from 1997 to 2016

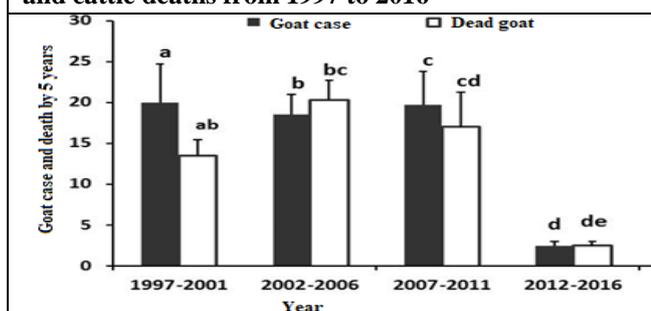


Figure 3: Comparative study between cases of illness and death of goats from 1997 to 2016

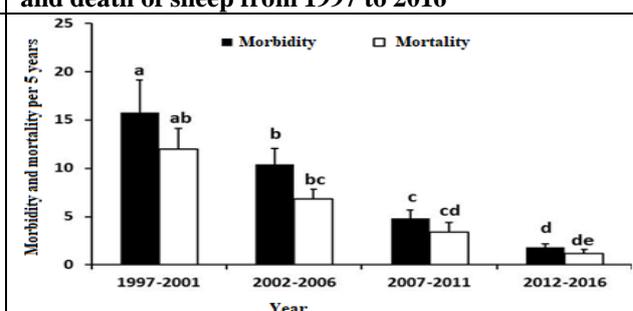


Figure 4: Variation in cattle morbidity and mortality rates over 5 years of observation years

DISCUSSION

The histogram in figure 1 shows the permanent frequency of sick and dead cattle in the areas visited with a significant difference between (a) and (c); (b) and (d); (ab) and (cd); (bc) and (de) but there is no significant difference between (a) and (ab); (b) and (bc); (c) and (cd); (d) and (de). Also, we find that the number of sick cattle is not proportional to the number of dead cattle. This means that among the sick there have been treated and healed and it may be that some animals have developed relative resistance.

Looking at the histogram in figure 2, it can be seen that in sheep cases of disease in the 5-year intervals from 2002 to 2006 are higher than in other years. The explanation could be found in the poor immunization coverage and the application of sanitation measures and the good management of corpses and other waste in the affected areas.

The histogram in figure 3 shows that there has been a remarkable increase in the number of deaths relative to the number of cases of disease in goats in the period from 2002 to 2006. The ignorance of the symptoms of the disease by breeders and the lack of means to treat their animals, the virulence of the viral agent must be at the origin of this situation.

The histogram in figure 4 shows a significant difference between the cases of (a), (b), (c) and (d) and the deaths of (ab), (bc), (cd) and (de) while that there is no significant difference between (a) and (ab); (b) and (bc); (c) and (cd); (d) and (de). This shows that the morbidity and mortality rates vary according to the years of observation. The highest peak was observed in the 1997-2001 range of years, while the lowest was recorded in 2012-2016. This indicates a continuous improvement in vaccination coverage and the strengthening of the vigilance of the agents of the Animal Disease Network of Guinea in endemic areas.

CONCLUSION

Anthrax occurs each year in Guinea at the beginning of the rainy season and at the end of the dry season with a more marked frequency in Middle Guinea and Upper Guinea and some sporadic cases in Lower Guinea and Forest Guinea.

The identification of the outbreaks leaves something to be desired because of the type of breeding, the insufficient health and communication coverage of the breeders, auxiliaries, breeding agents and veterinarians, working in the field despite all the efforts made by the government and national and international partners. Domestic and wild ruminants are most often contaminated at their meeting places (grazing areas, water points, forests, bushes ...) by direct or indirect contact by vectors (blood-sucking insects: horseflies, tsetse flies...).

A comparison of the morbidity and mortality rates reveals the thundering nature of the disease at certain periods and the tendency towards an acceptable level of control for other periods, illustrating the efforts that are taking place.

Raising awareness of the anthrax of professionals (breeders, veterinary auxiliaries and breeding agents) throughout the national territory therefore seems essential to avoid new episodes. It would be interesting to provide feedback from these episodes in Guinea and to define the procedure to be followed in the event of suspicion or confirmation of anthrax in the most operational way possible.

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