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Épidémiologie

Epidemiology of contagious bovine pleuropneumonia (CBPP) in Northern states of Nigeria. An update

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NWANTA (J.N.), UMHO (J.U.). Épidémiologie de la périnéumonie contagious bovine dans les États du nord du Nigeria. Mise à jour. Revue Élev. Méd. vét. Pays trop., 1992, 45 (1) : 17-20
La présente étude porte sur une période de 20 ans (1970 à 1989). Elle confronte, année par année, les données concernant l'apparition d'épidémies de périnéumonie contagious bovine et la vaccination contre cette maladie, afin de déterminer la corrélation entre la vaccination et le nombre d'épidémies enregistré au Nigeria. Les résultats montrent que lorsque la vaccination a été intensifiée, de 1975 à 1986, les cas étaient moins nombreux. Le nombre de troupeaux atteints et le nombre total d'animaux morts enregistrés dans les troupeaux était en augmentation à la fin des années 80. Les données concernant la répartition saisonnière des épidémies révèlent qu'elles surviennent principalement de août à décembre. Cette tendance est également observée dans d'autres pays. Enfin, l'étude a permis d'identifier les facteurs environnementaux et géographiques qui peuvent influencer la survenue des épidémies.

Introduction

Contagious bovine pleuropneumonia (CBPP) is caused by Mycoplasma mycoides var. mycoides (15) and is characterised by marked oedema of interstitial tissues in the lung, diffuse pneumonia and serofibrinous pleuritis (1). It plagued cattle in Europe and elsewhere in the 19th century as well as in Africa at the present time (1, 4, 6, 22).

The results of efforts to control CBPP are fluctuating. Reports show that the disease was controlled by 1965, but unfortunately it re-emerged (16). An attempt towards a regional international campaign for eradication of CBPP in West and Central Africa started in 1969. Nigeria launched the joint project (JP28) in 1974, although the actual campaign started in 1971 (6). When vaccination increased, the number of outbreaks decreased. At present, there is an upsurge of the disease across the country. The aim of this effort is to reveal the outbreak pattern, the relationship between outbreaks and vaccination coverage, seasonal distribution pattern and geographical location of the outbreak in relation to the disease situation in the frontier countries.

Materials and Methods

Data on CBPP outbreaks and vaccination figures in Nigeria for a twenty-year period (1970-1990) were collected from disease outbreak report files in Epidemiology, and National Rinderpest/CBPP co-ordination Units of the Federal Livestock Department, Kaduna. They were plotted against the respective years to determine the relationship between vaccination campaign and incidence of CBPP in Nigeria. Data on monthly outbreaks for Kaduna, Kano and Sokoto from 1984-1996, were also collected from the same source and monthly variation for the reported outbreaks determined using the ratio-to-moving average method (13).

Other data collected include general outbreaks information in ten Northern states between 1985 and 1989.

Finally, information on CBPP situation in the neighbouring countries with respect to their control policies and results were collected with relationship to our control problems.

Results

Table I shows that the number of outbreaks is increasing since 1986. The number of doses of vaccine used is decreasing. The relationship between the vaccination campaign and the number of outbreaks is shown in figure 1. When the vaccination was intensified between 1975 and 1996, the number of outbreaks was low. Also, the increase in late 1980s were the number of affected herds and the total number of deaths recorded in the affected herds.
TABLE I CBPP outbreaks and campaign situation in Nigeria, 1970-1989.

| Year | No. of outbreaks | No. of animals in the affected herds | Total death record in the affected herds | Mortality (%) | Vaccination figures |
|------|-----------------|-------------------------------------|------------------------------------------|---------------|-------------------|
| 1970 | 38              | 3 385                               | 534                                      | 15.8          | 326 392           |
| 1971 | 89              | 4 830                               | 700                                      | 14.5          | 1 448 288         |
| 1972 | 111             | 14 718                              | 3 000                                    | 20.4          | 2 602 212         |
| 1973 | 47              | 14 139                              | 2 237                                    | 15.8          | 2 500 672         |
| 1974 | 71              | 8 434                               | 725                                      | 8.6           | 3 014 601         |
| 1975 | 35              | 5 392                               | 303                                      | 5.6           | 2 911 246         |
| 1976 | 35              | 3 868                               | —                                        | —             | 3 485 013         |
| 1977 | 15              | —                                   | —                                        | —             | 2 200 000         |
| 1978 | 23              | 7 260                               | 608                                      | 9.8           | 4 542 566         |
| 1979 | 15              | 1 570                               | 177                                      | 11.2          | 5 246 988         |
| 1980 | 28              | 2 612                               | 309                                      | 11.8          | 6 236 888         |
| 1981 | 11              | 1 454                               | 77                                       | 5.3           | 5 900 000         |
| 1982 | 36              | 4 735                               | 415                                      | 8.7           | 6 083 475         |
| 1983 | 13              | 1 025                               | 133                                      | 13.0          | 4 065 710         |
| 1984 | 28              | 1 875                               | 204                                      | 10.9          | 3 641 122         |
| 1985 | 25              | 2 386                               | 255                                      | 10.7          | 4 916 682         |
| 1986 | 46              | 6 293                               | 343                                      | 5.5           | 6 897 793         |
| 1987 | 49              | 5 133                               | 559                                      | 10.9          | 4 980 474         |
| 1988 | 64              | 5 584                               | 531                                      | 9.5           | 3 747 587         |
| 1989 | 125             | 10 871                              | 812                                      | 7.5           | 2 986 825         |

Source: National Rinderpest/CBPP control programme, Annual Report on Field Activities (1984–1989), Federal Department of Livestock and pest control services, Kaduna, Nigeria.

Analysis of three-year data from Kaduna, Kano and Sokoto on a monthly basis revealed that most of the outbreaks occurred between October and March (table II). Time series decomposition of the data revealed a similar pattern (fig. 2).

TABLE II Summary of monthly reported CBPP outbreaks in Kaduna, Kano and Sokoto, 1984-1986.

| Month  | 1984 No. of outbreaks | 1985 No. of outbreaks | 1986 No. of outbreaks | Total Monthly outbreaks |
|--------|-----------------------|-----------------------|-----------------------|------------------------|
| January| 3                     | 1                     | 6                     | 10                     |
| February| 4                    | 4                     | 1                     | 9                      |
| March  | 2                     | 3                     | —                     | 5                      |
| April  | 1                     | —                     | 2                     | 3                      |
| May    | 1                     | —                     | —                     | 1                      |
| June   | —                     | 1                     | —                     | 1                      |
| July   | 1                     | —                     | 3                     | 4                      |
| August | —                     | —                     | 1                     | 1                      |
| September| —                   | —                     | 6                     | 6                      |
| October| 3                     | 1                     | 1                     | 5                      |
| November| 1                    | 5                     | 6                     | 12                     |
| December| 4                    | 1                     | 2                     | 7                      |

Source: National Rinderpest/CBPP control programme, Annual Report on Field Activities (1984–1989), Federal Department of Livestock and pest control services, Kaduna, Nigeria.

Fig. 1: The relationship between vaccination campaign and incidence of CBPP in Nigeria (1970-1989).

Fig. 2: Seasonal distribution of CBPP outbreaks in Kaduna, Kano and Sokoto States, 1984-1986.
When outbreaks between 1985 and 1989 were plotted in a map using the map references indicated in the outbreak files, it was observed that outbreaks tended to concentrate along river banks. Highly noticeable was the concentration of cases along river Benue in the Gongola State, river Sokoto, river Niger and river Hadeija (map 1). These sites also happen to be dry-season grazing grounds.

The control policies in the studied frontier countries (Cameroon, Niger and Chad) were similar to those of Nigeria, but the results obtained varied. In Cameroon, though the situation was improved, it still remains precarious due to limited national resources and infiltration of “lungers” from endemic neighbouring countries; while Niger recorded another outbreak in 1990 after six years of freedom from the disease, Chad has not reported any outbreak of the disease since 1988 (8, 9).

Discussion

Results of the vaccination campaign and the outbreaks observed in this study further strengthen the view that intensified efforts towards effective vaccination contribute to lowering CBPP outbreaks (1, 4, 7, 21). The pattern of the graph (fig. 1) is an indication of the achievements of JP28, but unfortunately the rhythm of vaccination appeared to decline towards the late 1980s.

This may be due to an inadequate availability of CBPP vaccine or to the fact that herdsmen refused vaccination of their cattle for fear of either adverse post-vaccinal reactions or cattle tax (4).

The results of monthly variation and time series decomposition agreed with the reports of other scientists (1, 5, 12, 22) according to which the period of the largest number of outbreaks corresponded to the time of the greatest cattle concentration towards the rivers for dry-season grazing and watering. The close contacts among healthy and carrier animals along these river banks probably enhanced the transmission of the infection.

Conclusion

The variation in the outbreaks from state to state agreed with the reports of DAVID-West (7) and Anisulowo (4) according to which the extent of outbreaks of CBPP within a particular location depends on the availability of adequate and effective control measures or reporting efficiency in that area. But the outbreaks recorded may not reflect the actual situation of the disease as many cases may not have been reported. Therefore there is need to intensify efforts towards cattle movement across borders as well as vaccination in order to control the increase in the number of outbreaks. To reach a large number of animals, vaccination could be carried out along river banks and other dry-season grazing areas during the dry season.

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