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ISDS 2018 Conference Abstracts

ISDS INTERNATIONAL SOCIETY FOR DISEASE SURVEILLANCE

Sero-prevalence of foot and mouth disease in cattle in Borena Zone, Oromia regional state, Ethiopia

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Objective

To determine the sero-prevalnce of FMD and indicate patterns of animal movement in Borena zone, Ethiopia

Introduction

The Foot and mouth disease (FMD) virus is a highly contagious and economically devastating trans boundery disease of cloven-hooved domestic and wild animals[1].

Methods

A cross-sectional study was carried out between April and November 2015 to investigate the sero-prevalence of foot-and-mouth disease (FMD) in cattle using serology and questionnaire servey in Borena zone.

Results

A total of 363 sera samples were collected from nine peasant associations found in three different districts. An overall seroprevalence of 42.7% (95%: CI= 37.7-47.84) was found during the study. There was statistically significant difference among the districts ($\chi2$ = 10.43, p=0.005) and the highest prevalence was found in Dire district which accounted for 52.8% (95%: CI, 44.0-61.4). Soda peasant association of Dire district and Surupa peasant association of Yabello district accounted for highest sero-prevalence 65.5% (95%: CI, 49.4-78.5) and 65.0% (95%: CI= 40.4-78.5), respectively. Statistical significant difference in footand-mouth disease seroprevalence ($\chi2$ =31.1, p=0.000) was found among the peasant associations. Similarly, there was significance difference ($\chi2$ =17.4, p=0.000) in the prevalence of foot-and-mouth disease between age groups. Though the seroprevalence foot-and-mouth disease was higher in females than in males, there was no significant difference ($\chi2$=1.63, p=0.202) between sex. The different risk factors analyzed during this study indicated that, peasant associations (PAs), district and age were seen to be significantly associated (p<0.05) with the seroprevalence of foot-and-mouth disease. The questionnaire survey revealed that foot-and-mouth disease outbreak was commonly seen during June to August (Short rainy season) and December to February (Long dry season), locally called Adolessa and Bona, respectively. Younger (1-3 years) animals were most susceptible than calf and adults (>3years). Moreover, an extrinsic factor like dry season enforces pastoralist to travel a longer distance to look for grazing lands and water sources that creates suitable conditions for foot-and-mouth disease transmission between infected and susceptible animals.

Conclusions

FMD is an important transboundery animal disease that affects the livelihood of farmers and economy of the country. In pastoral areas like Borena where livestock movement is common during dry season, the disease is devastating and spreading from one area to the other. Therefore, an extensive regular serological survey, virus isolation, and characterizations of FMD virus need to be conducted for a possible development of poly-valent vaccines that contains commonly circulating serotypes of FMD virus in Ethiopia.

Table 2: Sero-prevalence of FMD in peasant associations of different districts found in Borena zone of Oromia

Districts	No. of sera tested	No. testing positive	Percentage prevalence (95%CI)
1.Dire	125	66	47.2(44.0-61.4)
* Dida bedena	40	16	40(25.8-55.3)
*Soda	40	26	65.5(49.4-78.5)
*Dokole	45	24	53.3(38.8-67.5)
2. Moyale	68	20	29.4(19.5-41.02)
*Bokola	39	10	25.6(13.8-41)
*Legesure	29	10	34.5(19.0-52.9)
3. Yabello	170	69	40.6(33.4-48.1)
*Chiro	45	12	26.7(15.3-40.9)
*Harbore	40	17	42.5(27.9-58.1)
*Surupa	40	26	65(40.4-78.5)
*Elewoya	45	14	31.1(43.1-71.5)
Total	363	155	42.7(37.7-47.84)

$\chi2$=31.1, P=0.000

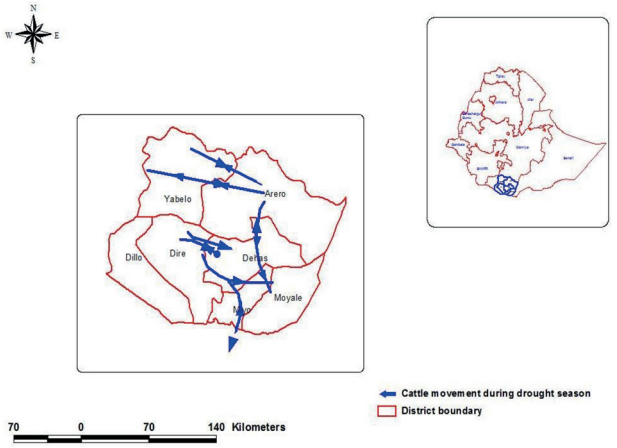
*= PA's(Peasant association)

Table 3: Seroprevalence of FMD in different age groups

Age	Number of sera tested	Number of testing postive	%prevalence(95%CI)
Calves	98	4	14.3%(4.8-31)
Young	156	58	37.2%(29.9-45)
Adult	179	93	52.0(44.6-59.2)
Total	363	155	42.7(37.7-47.84)

Table 4: Seroprevalence of FMD between the two sexes

Sex	Number of sera tested	Number of testing positive	%prevalence(95%CI)
	121	46	38.0(29.7-46.9)
	242	109	45.0(38.9-51.4)
	363	155	42.7(37.7-47.84)



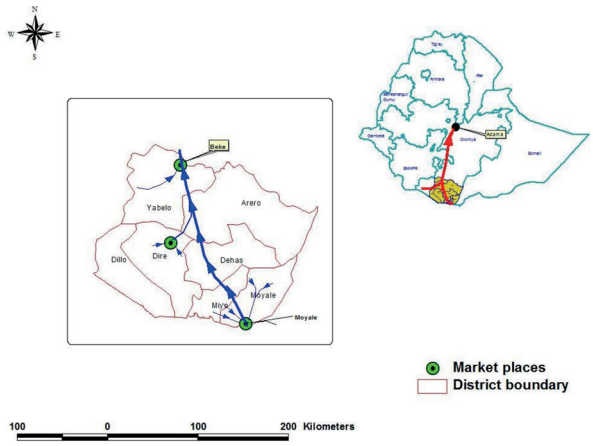


Figure 1: Livestock movement during drought season

Keywords
Borena; FMD; Sero-prevalence; 3ABC-ELISA

Acknowledgments

Acknowledgements
We are grateful to NAHDIC in supporting this serosurveillance study and Dr. Getachew Gari for his constructive comments and suggestions during prepartion of the manuscript.

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