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PREVALENCE OF EAST COAST FEVER AND ASSOCIATED RISK FACTORS IN CATTLE IN BULAMBULI DISTRICT, EASTERN UGANDA

BY

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DECLARATION

I, Mugide Nusula, to the best of my knowledge declare that this dissertation is my own original work done within the period of May-June, 2018 and that it has neither been submitted nor been concurrently submitted to any other institution.

6/8/2018

This dissertation has been submitted with the supervision and approval of the supervisor who is member of staff from Busitema University Arapai Campus.

Name: Dr. ETIANG PATRICK

Signatures: ..... Date 6/8/2018

DEDICATION

To my Lovely parents, siblings, relatives, friends, my supervisor Dr.Etiang Patrick and to the Department of Production Bulambuli District Local Government.

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LIST OF ABBREVIATIONS

ECF	East Coast Fever.
HP	Hemoporotozoan Parasite
TBDs	Tick Borne Diseases.

ABSTRACT

East Coast fever (ECF) is a disease of cattle caused by haemo protozoan parasite *Theileria parva*, transmitted by Rhipicephalus appendiculatus (brown ear tick). Bulambuli District is one of the districts in Eastern Uganda whose livestock production is affected by tick borne diseases. The aim of this study was to determine the prevalence of ECF and associated risk factors in Bulambuli District. The animals were selected randomly and both the local and cross breeds of cattle were sampled in various sub counties located in both the upper and lower zones of the District. Blood samples and lymph node smears were collected from each of the 80 animals sampled for this study. A structured questionnaire was administered to the 80 farmers to capture farmer characteristics, breed, and age of cattle and risk factors of ECF infection. Giemsa staining technique, a method that involves microscopic examination was used to observe Theileria Parva piroplasms in the blood and lymph node smears. The findings showed that a total of 24 (30.0%) blood samples tested positive and 28(35.0%) lymph node smears tested positive. The theileria Parva prevalence of lymph node smear testing were 35% of animals sampled. 24 (28.9%) were local breed and 56 (70.9%) cross breeds. The prevalence showed that 21(26.3%) of the local animals tested positive and 7(8.8%) cross breed tested positive. However 5(6.3%) of the animals sampled were found sick with clinical signs of ECF which included nasal discharge, high body temperature. swollen lymph nodes with brown ticks on the body. The prevalence was higher in the lower zone 24(30.0%) compared to the upper zone Elgon 4(5.0%). 24 (29.1%) animals were raised on Communal grazing and 56 (70.9) were on Zero grazing. 21 (26.3%) animals on communal grazing tested positive and 7(8.8%) on zero grazing tested positive. 47(58.8%) respondents were not aware about ECF in cattle and the causative factor. 70 (85.5%) cannot differentiate ticks and cannot tell which one exactly causes ECF. However 33(41.3) were aware about ECF and its causative agent and 10 (12.3%) were able to differentiate ticks and could identify the one that causes ECF as brown ear ticks. About control measures, 46(57.5%) farmers spray their animals, 34(42.5%) do not spray, 8(10.0%) know about other control means of ECF apart from dipping means like treatment when sick and 72(90.0%) do not know other means of control.

CHAPTER ONE

1.0 Introduction

East Coast fever (ECF) is a disease of cattle caused by haemo protozoan parasite *Theileria parva*, transmitted by Rhipicephalus appendiculatus (brown ear tick) (Mwabonimana, Bankundiye, & Niyonsaba, 2017). The disease causes high morbidity and mortality in local and exotic cattle hence leading to cattle production losses (Ssekitto & Mwayi, 2004). Losses are caused directly by death of animals whereby the mortality may exceed 90% or indirectly through the costs of control and reduced production capability (Tarimo, 2013). Hemoparasites (HP) are of great economic impact on livestock, affecting 80% of the world's cattle population (Kasozi et al., 2014)

The disease is prevalent across eleven countries in Southern, Central and Eastern Africa. The affected countries are Kenya, Sudan, Burundi, Tanzania, Malawi, Rwanda, Zaire, Mozambique, Zambia, Uganda and Zimbabwe (Gul et al., 2015). This is due to warm humid climatic conditions favorable for growth and development of tick species (Olwoch, Jaarsveld, Scholtz, & Horak, 2007) and also due to lack of proper management practices (Gul et al., 2015).

Globally, *Theileria Annulata and Theileria Parva* species are the most important tick-transmitted pathogenic species causing bovine theileriosis. *T. parva* also causes other forms of theileriosis which include January disease that occurs mainly in Zimbabwe and Corridor disease which occurs in South Africa.

The occurrence of the disease depends on the interactions which involves the environment, vector (tick), causative organisms (the parasite), and the hosts (Stoltsz, 2005).

Ticks acquire infection by ingesting piroplasm-infected erythrocytes during feeding and undergo an obligate sexual cycle. Piroplasm differentiates to macro- and micro-gametes within lumen of tick's gut by gametogenesis. Gametes are morphologically similar and undergo syngamy to form a spherical diploid zygote. Subsequently, the zygote undergoes meiotic division, differentiates in epithelial cells of tick gut and ultimately forms motile uninucleate kinetes that lie free in cytoplasm. Kinetes cross the basal membrane as well as the lamina of gut cells to specifically enter salivary gland and are not found in any other tick organ (Gul et al., 2015)

REFERENCES

Gitau, G. K., Perry, B. D., Mcdermott, J. J., Katende, J. M., & Jm, M. (1997). Risk factors associated with *Theileria Parva* infection in cattle in smallholder dairy farms in Murang â€lm a District , Kenya ;, 31–32.

Gul, N., Ayaz, S., Gul, I., Adnan, M., Shams, S., & Ul Akbar, N. (2015). Tropical Theileriosis and East Coast Fever in Cattle: Present, Past and Future Perspective. *Int.J.Curr.Microbiol.App.Sci International Journal of Current Microbiology and Applied Sciences Int.J.Curr.Microbiol.App.Sci*, *4*(48), 1000–1018. Retrieved from http://www.ijcmas.com

Kasozi, K. I., Matovu, E., Tayebwa, D. S., Natuhwera, J., Mugezi, I., & Mahero, M. (2014). Epidemiology of Increasing Hemo-Parasite Burden in Ugandan Cattle. *Open Journal of Veterinary Medicine*, *4*(10), 220–231. https://doi.org/10.4236/ojvm.2014.410026

Marcellino, W. L., Salih, D. A., Julla, I. I., Rahim, A., & Hussein, M. El. (2012). Seroprevalence of East Coast fever in Central Equatoria State , South Sudan, *48*(4), 379–385.

Mwabonimana, M. F., Bankundiye, R., & Niyonsaba, L. (2017). Risk Factors Associated with East Coast Fever in Cattle while Ticks Control Strategy is Applicable in Rwanda Risk Factors Associated with East Coast Fever in Cattle while Ticks Control Strategy is Applicable in Rwanda, *7*(1), 1875–1881.https://doi.org/10.5455/jasa.196912310400001001

Olwoch, J. M., Jaarsveld, A. S. V. A. N., Scholtz, C. H., & Horak, I. G. (2007). Climate change and the genus Rhipicephalus (Acari : Ixodidae) in Africa, *72*, 45–72.

Ssekitto, C. M. B., & Mwayi, W. (2004). Factors affecting the sustainability of tick and tick-borne disease control in Uganda and malpractice associated with acaricide use, 663–666.

Stoltsz, H. (2005). Theileria parva infections. *Fact Sheet*, 1–3.

Swai, E. S., Karimuribo, E. D., Rugaimukamu, E. A., & Kambarage, D. M. (2006). Factors influencing the distribution of questing ticks and the prevalence estimation of T .

parva infection in brown ear ticks in the Tanga region , Tanzania, *31*(2), 224–228.

Tarimo, M. A. (2013). Studies on the Prevalance of East Coast Fever Among Cattle.

Walker, A. R. (2011). Eradication and control of livestock ticks : biological , economic and social perspectives, 945–959. https://doi.org/10.1017/S0031182011000709

Muhanguzi, D., Picozzi, K., Hatendorf, J., Thrusfield, M., Welburn, S.C., Kabasa, J.D., Waiswa, C. 2014. Prevalence and spatial distribution of Theileria parva in cattle under crop-livestock farming systems in Tororo District, Eastern Uganda. Parasites Vectors, 9(91): 1–8

Rubaire-Akiiki, C., Okello-Onen, J., Nasinyama, G. W., Vaarst, M., Kabagambe, E. K., Mwayi, W., Musunga, D. and Wandukwa, W. (2004). The prevalence of serum antibodies to tick-borne infections in Mbale District, Uganda: The effect of agro-ecological zone, grazing management and age of cattle. Journal of Insect Science 8: 4 – 8.