ABSTRACT

Bovine leukosis infection (EBL) is a worldwide occurring disease of cattle caused by the bovine leukemia virus and is clinically characterised by occurrence of multiple lympho-sarcomas in about 10% of the infected cattle. In Africa, prevalence of Bovine leukosis infection has been reported in Namibia, Egypt, South Africa, Uganda and Tanzania. In Kenya, cases of bovine lympho-sarcomas have been reported but the incidence, prevalence and distribution of the disease in the country remains unknown. In addition to this, the risk factors associated with the occurrence of bovine leukosis infection in Kenya have not been established. The economic losses associated with the disease include; death of the cattle, decreased milk production, decreased reproductive efficiency and condemnation of infected carcasses and restriction of trade of livestock to other countries. The two objectives of this study were to determine the seroprevalence of bovine leukosis infection and the risk factors associated with the occurrence of the disease in selected farming systems in Kenya.

The sera samples used in the study were collected in a cross-sectional study under surveillance for sensitive trade diseases project that was carried out jointly by the ministry of livestock in Kenya and the Intergovernmental Authority on Development (IGAD) across the 47 counties of Kenya between July and October 2016. In this study, 1383 bovine sera samples were collected from 14 Counties in Kenya that were conveniently selected in consideration to the common livestock farming system in the Counties and tested for the presence of antibodies against Bovine leukemia Virus using the IDEXX anti-BLV indirect ELISA test (IDEXX Leukosis Serum Screening, 06-02110-17). The Microsoft® Excel 2013 spreadsheet was used to enter the raw data which was analysed using the Stata® 14 statistical package. Seroprevalence of bovine leukemia infection (expressed as a percent positivity) was described in the different categories of the risk factors which were: Age, breed, sex, farming systems and County of origin. Using a binary outcome, a univariate logistic regression model was used to determine risk factors associated with occurrence of EBL in Kenya while accounting for clustering at the county level. These and confounders were fit in a multivariate mixed logistic regression model with County being a random effect due to the clustering of the data at this level and the other risk factors as fixed effects.

An overall prevalence of 7.6% was observed with 105 out of the total 1383 bovine sera samples testing positive for antibodies against bovine leukemia virus. On accounting for clustering at the county level, age (p=0.001) was significantly associated with occurrence of EBL in Kenya while farming system was associated with occurrence of EBL marginally (p=0.063) at the 5% significance level. The odds of EBL occurring in cattle less than one year old in a given County were 0.36 times less than older cattle in the same county. The odds of EBL occurring in cattle in pastoral farms were 19 times higher than in zero grazed cattle in the same County. The odds of EBL occurring in ranched cattle was 10 times higher than zero grazed cattle in any of the 14 Counties in Kenya. Given that a cattle in a given County tested positive for EBL, the probability of a randomly selected cattle from the same County testing positive was 64.2%.

Bovine leukosis infection is present in cattle in Kenya and cattle kept in Pastoral farming systems have a higher probability of testing positive for bovine leukosis infection. Awareness about the occurrence and spread of the disease should be created in the country with emphasis
put in the Counties with predominantly pastoral systems as they had the highest prevalence. Control measures against occurrence and spread of EBL especially in Counties with high prevalence of the disease should be undertaken using this information and further research carried out to determine the frequency of bovine lympho-sarcoma cases in slaughterhouses in Kenya and quantify the economic losses from Bovine leukosis infection in Kenya.