P145

A new approach for bovine cysticercosis control

Samuel Carvalho de Aragão[1], Silvana de Cássia Paulan[2], Yuri Tani Utsunomyia[2], Pier Kenji Rauschkolb Katsuda Ito[2], José Henrique Hildebrand Grisi Filho[3], Cáris Maroni Nunes[2], [1]Instituto Federal do Pará, Paragominas, PA, Brazil; [2]São Paulo State University, Araçatuba, SP, Brazil; [3]University of São Paulo, São Paulo, SP, Brazil. Contact: samuel.aragao@hotmail.com

Bovine cysticercosis is a worldwide spread parasitic disease caused by the larval stage of Taenia saginata and responsible for economic losses in the beef cattle industry. It is also a public health issue and the taeniasis-cysticercosis complex occurrence is associated with poor hygiene habits and sanitation problems. The main measure adopted in Brazil to prevent human infection is the sanitary inspection at slaughterhouses. Network properties are increasingly been used in epidemiological studies to manage, control and predict a disease outbreak.

Purpose:

This study aimed at characterize the bovine cysticercosis occurrence and the cattle movement network of a Brazilian state (Mato Grosso do Sul) in order to direct control strategies.

Methods:

Cattle movement data consisted in a summary of all Animal Movement Permits (AMP) issued during 2012. AMPs had information on the origin and destination municipalities, number of animals moved, movement purpose and date. A cattle movement network was constructed with nodes representing the municipalities and edges connecting nodes representing the purpose, date and number of cattle moved between them. Infomap algorithm was used to cluster nodes with narrower relationships. The number of slaughtered animals and the number of carcasses affected by live and calcified T. saginata cysts from each municipality for that year resulted in a choropleth map of the proportion of infected animals.

Results:

The mean cysticercosis incidence was 1.09 and the map evaluation revealed that the southern region of the state is endemic for the disease. The observed network shows greater trade movement between close municipalities.

Conclusions:

The network model associated to the disease geospatial representation suggest that the southern region of the Mato Grosso do Sul state would be a priority target for implementing cysticercosis control measures such as health education programs, massive chemotherapy treatment in bovine population, human diagnosis and chemotherapy.

Relevance:

This study highlighted regional characteristics that provide support information for planning strategies not only for cysticercosis control but for other diseases as well.