

Epidemiological Survey on *Trypanosoma evansi* Infection in Vietnam

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INTRODUCTION

The total number of the cattle and buffaloes in Vietnam are approximately 5 million. These animals are of great importance, specially as working animals. Trypanosomiasis caused by *T. evansi* is considered to be one of the most important diseases of Ruminant in Vietnam, particularly, in buffalo.

Our parasitological investigators made attempt to survey on epidemiology of this disease. Surveys showed that the distribution of *Trypanosoma evansi* and the Trypanosomiasis prevalence varied over time and was related with the use Trypanocided of drugs to control and the management of animals.

Surveys were carried out from 1970's to 1997 in various regions:

- mountain areas (altitude of 1100m)
- middle areas (altitude of 200 - 400m)
- plain areas around of Red River (altitude of 3-5m)

Evolution of Trypanosomiasis and infection prevalence were separated in three periods: 1970-1980; 1980-1990; 1990-now.

Epidemiological evolution of Trypanosomiasis

1. Evolution of trypanosomiasis in the first period (in 1970) (survey carried out by Doan Van Phuc, Phan Dich Lan, Pham Sy Lang) :

- The methods following were used to detect *T. evansi* in this period: Mouse inoculation, wet blood film/Giemsa stained slides, clinical signs. Those methods were sufficient to detect *T. evansi*.
- Survey showed that *T. evansi* prevalence is of 10-15% in mountain areas, of 10% in middle areas, and of 60% in plain areas.
- The disease out broke in acute case and having many severe epidemics occurred with obvious clinical indications of surra (high fever; stiffness, recumbency, oedema, diarrhoea) and caused great economic less.
- Survey showed that 50-90 % buffaloes moving from mountain to lowland, and about 10-15% local buffaloes in plain areas died in spring - winter season by *T. evansi* infection, Fasciola infection and stress of bad nutrition; of working hard, of the converse weather.
- The outbreak of disease in this period related with the management of animals. Buffaloes belong to the cooperatives and are kept on the cooperative farms so much stress due to malnutrition, working hard and the secondary infections (Table 1).
- The drugs following were used in this period: Novarselnol Benzen*, Naganin **, and those drugs used one or two times a year in a large number of animal to control.

2. Evolution of trypanosomiasis in the second period (in 1980's) (surveys carried out by Doan Van Phuc, Pham Sy Lang, Le Ngoc My, Luong To Thu, Nguyen Quoc Doanh):

- In this period, we used also parasitological methods: Mouse inoculation/Giemsa

Table 1. Relation of influential factors on outbreak of Trypanosomiasis (Plain area in North Vietnam in 1970's - 1980's)

Months	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.
Seasons	Winter	Springer			Summer			Autumn		Winter		
Temperature	Cold	Warm			Very hot				Cold			
Possibility of nutrition for buffaloes	insufficient		sufficient					insufficient				
Period of hard working												
Period where Trypanosomiasis outbreak												

stained film but it is difficult to find *T. evansi* in blood so from 1985 the slide agglutination test. (SAT) was used to survey epidemiology of *T. evansi*.

- Our survey showed that: The disease has stabilized in plain area and mostly chronicle case, are reported so there are less economic loss than the last period.
 - *T. evansi* prevalence reduced of 7-13% in buffaloes and 2-7% in cattle (by MI/ Giemsa Stained film).
 - But infection prevalence (by SAT) was still of 13-16% in plain areas and 21-25% in the mountain areas.
 - There are some outbreaks of disease, especially, outbreak of Trypanosomiasis of milking - buffalo in Phung Thuong farm (1987-1988). *Trypanosoma evansi* was detected in 50% of animals by mouse inoculation (MI) - Trypanosomiasis cause abortion.
 - One of the reason influential in evolution of disease in this period is of change of management of animals. Animals belong to the farmers so the stress of bad nutrition and working hard is limited and another reason is of use Trypanocided of drugs in large scale for control disease in the last period.
- Drugs used in this period: Naganol**, Trypamidiam *, and from 1980-1985, drugs used to prevention in large number of animals and treatment free of charge.
- From 1985-1990, drugs used only for treatment of sick animals and treatment is in charge. This ways to control in this period may be make change evolution in the next period.

3. Evolution. of trypanosomiasis in the third period (in 1990's):

- We used also the MI, microhaematocrit centrifuge test (MHCT) but it is not sufficient for epidemiological survey. Basic on the great supports of Franc, Belgium, English scientists we carried out immonodiagnosis test (SAT, CATT, IFAT, Ab-ELISA, Ag-ELISA) and especially the results of comparison of four methods to detect *T. evansi* (Tables 2 and 3).
- Our survey showed that infection prevalence increased - particularly in the mountain areas.
- Parasitism is of 3-6% in plain areas and 15-29.8% in middle and mountain areas (by

MI/MHCT).

Table 2. Comparison of the sensitivity and specificity of four immunodiagnosis test to detect antibody against *T. evansi*

Animals examined	Tests			
	Rate of positive samples by immunological tests (%)			
	ELISA.Ab	IFAT	CATT	SAT
55 Buffaloes infected <i>T. evansi</i> by MI	89.00	94.55	90.90	74.54

- ELISA.Ab: following the protocol of ILRAD
- IFAT: following the protocol of Veterinary University - Lyon - France
- SAT: following the protocol of Doan Van Phuc - NIVR - Vietnam
- CATT: following the protocol of prof. Van Meivenne and the reagent was provided by Institute of Tropical Medicine, Antwerp, Belgium

Table 3. *Trypanosoma evansi* prevalence from 1992 to 1996 by CATT (8,332 samples of buffaloes)

Time	<i>T. evansi</i> prevalence, %		
	Plain areas	Middle areas	Mountain areas
1992 - 1993	24.31 (62/255)	19.34 (300/1551)	25.75 (604/2346)
1994		17.20 (43/250)	25.75 (103/360)
1995 - 1996	36.60 (120/327)		39.00 (76/195)
TOTAL	31.27 (182/582)	18.39 (345/1800)	25.75 (670/2630)

- Infection prevalence (by CATT on 8,332 samples) is of 17-31.27% in different rations.
- Disease occurred in chronic case but *T. evansi* was endemic of wherever and whenever, and Trypanosomiasis related on outbreak of Pasteurellosis.
- Epidemic outbreak in some places with clinical signs (conjunctivitis, Ocdema, swelling of legs, abortion).
- Particularly, one outbreak of abortion in mountain province caused by *T. averse* (1992), there are 100 buffaloes aborted (70% of pregnant buffaloes) and 48.00% of which infected *T. evansi* (by MI) and 71% was positive (by CATT).
- In our opinion the outbreak of disease in this period was related with in subsequent use of drugs for control, the drugs used only to treat sick animals on basic of clinical sign. But animals belongs to farmers and keep in household so they have good health and stress of nutrition and of working hard was limited. A lot of regions have not

using drugs for a long times so *T. evansi* exist in those regions and occurred t trypanosomiasis when having second infection, particularly Pasteurellosis.

CONCLUSION

- Trypanosomiasis was always considered as one of the most important disease of ruminants in Vietnam, particularly, buffalo in north Vietnam. And caused great economic loss.
- Disease evolution varied according to different periods and related on management of animal herd and using of drugs for treatment and control in the period. In 1970's disease outbreaks in acute case and caused great economic loss on buffaloes in plain areas in spring.
- winter season, because of high *T. evens* infection and stress of bad nutrition, of working hard and of converse weather.

In 1980's-1990's: Disease was chronic case, mortality of Disease reduced because extensive use of drugs in a large scale for prevention and because of changes in management of animals (animals belongs to farmers) so stress of bad nutrition and working hard was limited.

However *T. evansi* was still endemic of Wherever and Whenever. Disease is easy to occur when having an outbreak of pasteurellosis and other diseases and caused economic losses. Nowadays, in Vietnam the most importance to control of surra is the routine application of diagnostic test and subsequent treatment of animals. The diagnostic test must be done by local veterinarian, they have to be supplied with materials and reagents for making an diagnosis.

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