

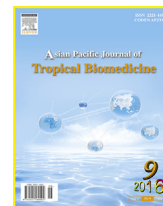
HOSTED BY



ELSEVIER

Contents lists available at ScienceDirect

Asian Pacific Journal of Tropical Biomedicine

journal homepage: www.elsevier.com/locate/apjtbShort communication <http://dx.doi.org/10.1016/j.apjtb.2016.06.014>Milk losses due to bovine tropical theileriosis (*Theileria annulata* infection) in AlgeriaOuarda Ayadi^{1*}, Mohamed Gharbi², Mohamed Cherif Benchikh Elfegoun¹¹Laboratory of Parasitology, Institute of Veterinary Science El Khroub, University of Mentouri Brothers, Constantine 1 Road Batna, Constantine 25000, Algeria²Laboratory of Parasitology, National School of Veterinary Medicine, Institution of Agricultural Research and Higher Education, Univ. Manouba, 2020 Sidi Thabet, Tunisia

ARTICLE INFO

Article history:

Received 30 Dec 2015

Received in revised form 15 Jan, 2nd

revised form 25 Mar 2016

Accepted 10 Jun 2016

Available online 28 Jul 2016

ABSTRACT

The authors studied the impact of tropical theileriosis onset on milk yield decrease in 10 local bred cows in Skikda (Northern Algeria) during 2015 summer season. The milk yield decrease estimated weekly during two months was 2.76 L/day/cow corresponding to 31.92% of the total milk yield. This decrease corresponds to 110.5 Algerian Dinars (1.02 US\$/day/diseased cow). The relative variation of milk yield showed a dramatic decrease from 82.72% to 0.76% at Day 21 then became constant. Further studies are needed to improve these estimations of financial losses due to bovine tropical theileriosis in Algeria.

Keywords:

Theileria annulata

Milk

Cattle

Local breed

1. Introduction

Bovine tropical theileriosis [*Theileria annulata* (*T. annulata*) infection] is a tick-borne disease affecting cattle; it is transmitted by *Hyalomma scupense* (syn. *Hyalomma detritum*) ticks [1,2]. In the North Central of Algeria, the prevalence of *T. annulata* infection was estimated with fluorescence resonance energy transfer polymerase chain reaction to be 30.16% (108/358) [3]. The most frequent clinical signs are hyporexia, drop in milk yield and fever [4]. This disease is enzootic in Algeria [5] and is to date causing high losses in cattle industry [6]. Despite this importance, studies about this disease are scanty in Algeria and no one concerned its financial impact in either asymptomatic or clinically infected cattle.

2. Materials and methods

The present study was carried out in Skikda (Northern Algeria); it is a humid region enzootic for bovine tropical theileriosis. A total number of 10 milking crossbred cows aged between 3 and 6 years (mean age = 4.3 years) that have presented typical clinical tropical theileriosis symptoms (hyperthermia between 40 and 42 °C, lymph node enlargement, decreased milk yield, anorexia or hyporexia) were included in the survey. The animals received intramuscularly injection of buparvaquone at the conventional dose of 2.5 mg/kg. The milk yield was estimated weekly during two months. The mean relative variation of milk yield was calculated for each visit as follows:

Relative variation (%) = (milk yield at visit n + 1 – milk yield at visit n)/milk yield at visit n × 100.

3. Results and discussion

After treatment, the mean milk yield increased from 2.25 L at Day 7 to 8.65 L at Day 63 (Figure 1). The relative variation of milk yield showed a dramatic decrease from 82.72% to 0.76% at Day 21 then became constant. The mean milk yield loss in the

*Corresponding author: Ouarda Ayadi, Laboratory of Parasitology, Institute of Veterinary Science El Khroub, University of Mentouri Brothers, Constantine 1 Road Batna, Constantine 25000, Algeria.

Tel: +213 551442073

E-mail: ayadioird@yahoo.com

The animals were handled and treated according to the recommendations of DSA (Direction des Services Agricoles).

Peer review under responsibility of Hainan Medical University. The journal implements double-blind peer review practiced by specially invited international editorial board members.

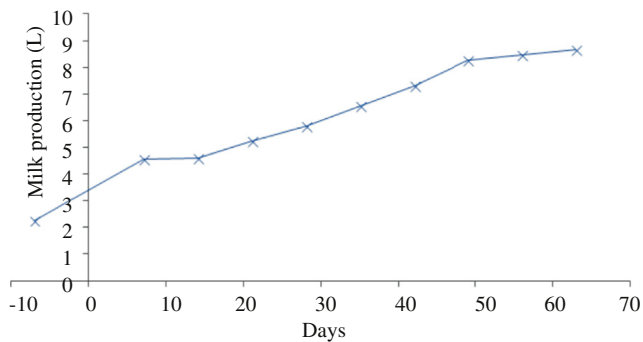


Figure 1. Mean milk yield in *T. annulata* clinically infected cows.

10 cows represented 31.9% of the mean milk yield at Day 63 corresponding to 2.76 L/day/cow. These losses were estimated to 110.5 Algerian Dinars (US\$ 1.02)/day/infected cow. The estimated losses were underestimated since we considered the milk yield at Day 63 as a reference. But even if the cows were treated, they remain carriers and show a persistent milk yield decrease. Few studies concerned the milk losses in clinically infected *T. annulata* cows in the world. M'Barek *et al.* [7] estimated the losses due to clinical cases of bovine tropical theileriosis in Northern Tunisia to be 300 L during one month after *T. annulata* infection. This discrepancy should be explained by the fact that these cows are Holstein. Our estimation was higher than those reported by Singh [8], who estimated the losses due to carrier *T. annulata* infection in zebu-crossbred cattle to be 1.4 L/day per carrier animal. In Tunisia, Gharbi and colleagues [9] estimated the daily milk yield losses due to *T. annulata* in taurine crossbred (*Bos taurus*) cattle to be 0.77 kg per *T. annulata* carrier cow.

This preliminary study showed high milk yield losses in cows due to clinical cases of bovine tropical theileriosis in local Algerian bred cattle; further studies are needed to improve this estimation in order to rank bovine tropical theileriosis among other cattle diseases in Algeria. These studies will motivate the Algerian animal health decision makers to prioritize this disease among others.

Conflict of interest statement

We declare that we have no conflict of interest.

Acknowledgments

The authors are grateful to the farmers who let us handle their animals.

References

- [1] Gharbi M, Darghouth MA. A review of *Hyalomma scupense* (Acari, Ixodidae) in the Maghreb region: from biology to control. *Parasite* 2014; **21**: 2.
- [2] El Hussein AM, Hassan SM, Salih DA. Current situation of tropical theileriosis in the Sudan. *Parasitol Res* 2012; **111**: 503-8.
- [3] Ziam H, Kelanamer R, Aissi M, Ababou A, Berkvens D, Geysen D. Prevalence of bovine theileriosis in North Central region of Algeria by real-time polymerase chain reaction with a note on its distribution. *Trop Anim Health Prod* 2015; **47**: 787-96.
- [4] Gharbi M, Touay A, Khayech M, Laarif J, Jedidi M, Sassi L, et al. Ranking control options for tropical theileriosis in at-risk dairy cattle in Tunisia, using benefit-cost analysis. *Rev Sci Tech* 2011; **30**: 763-78.
- [5] Ziam H, Benaouf H. Prevalence of blood parasites in cattle from wilayates of Annaba and El Tarf east Algeria. *Arch Inst Pasteur Tunis* 2004; **81**: 27-30.
- [6] Chauhan HC, Patel BK, Bhagat AG, Patel MV, Patel SI, Raval SH, et al. Comparison of molecular and microscopic technique for detection of *Theileria annulata* from the field cases of cattle. *Vet World* 2015; **8**: 1370-4.
- [7] M'Barek M. [Impact of tropical theileriosis on milk yield: preliminary estimation in the lower valley of Medjerda] [dissertation]. Tunisia: National School of Veterinary Medicine of Sidi Thabet; 1994. French.
- [8] Singh DK. Theileriosis in India. In: Singh DK, Varshney BC, editors. *Orientation and coordination of research on tropical theileriosis*. Anand: National Dairy Development Board; 1991, p. 23.
- [9] Gharbi M, Rekik B, Mabrouk M, Hassni M, Zroud W, Mhadhbi M, et al. Impact of the carrier state by *Theileria annulata* on milk yield in Tunisian crossbred (*Bos taurus*) cattle. *Asian Pac J Trop Dis* 2015; **5**(11): 884-7.