

Case Report

The First Record of *Linguatula serrata* Infection of Two-Humped Camel (*Camelus bactrinus*) In Iran

*H Haddadzadeh ¹, S Shamsadin Athari ², B Hajimohammadi ²

¹Dept. of Parasitology, Faculty of Veterinary Medicine, University of Tehran, Iran

²Faculty of Veterinary Medicine, University of Urmia, Iran

(Received 12 Nov 2008; accepted 12 Feb 2009)

Abstract

Linguatula serrata, is a cosmopolitan zoonotic parasite. Adult of *L. serrata* parasitize the nasopharynx of canids. Consuming raw glandular material of infected intermediate hosts (camel, sheep, cattle, goat, etc.) can infect human. In Iran, two-humped camel is merely found in cold regions (Ardabil and East Azarbijan provinces) and is in danger of extinction. A seven-year-old two-humped male camel, due to car accident injury was sent to slaughterhouse of Tabriz, Iran. In meat inspection practice, the visceral organs were taken out. A small red nodule having a white center was observed at the surface of the left lobe of lung. To study more, the whole of the left lobe of lung was sent to the parasitology laboratory. One nymph of *L. serrata* was separated from the specimen. This is the first report of infection with *L. serrate* of two-humped camel in Iran.

Keywords: Two-humped camel, *Linguatula serrata*, Iran

Introduction

Linguatula serrata is a cosmopolitan zoonotic parasite, belonging to the phylum Pentastomida (1-4). Adult of *L. serrata* inhabit in the respiratory system of canids, which serve as final host, and their infective eggs containing larva are discharged into the environment by their nasopharyngeal secretions and ingested by herbivorous animals, the natural intermediate hosts (2, 3, 5, 6). Then larva reaches the mesenteric lymph nodes (MLNs), liver, lung, etc. in which it develops to infective nymphs after 6 to 9 months (2). Human beings may also be infected by both the nymph stage, a condition called nasopharyngeal linguatulosis or

Halzoun syndrome and the egg, a condition called visceral linguatulosis (5,7). The human infection to this parasite has been reported in different parts of the world as well as Iran (4,5,7) and *L. serrata* infection in animal intermediate host as main source of infection in public health, should be considered as an important field of study.

Case report

A seven-year-old two-humped male camel, critically damaged by car accident, was sent to slaughterhouse of Tabriz, Iran. In meat inspection practice, the visceral organs were taken out and studied. One small red nodule

*Corresponding author: Tel:+98 912 148 36 95;
Fax:+9866933222; E-mail: hhadad@ut.ac.ir

with a white center being less than 1 cm was observed at the surface of left lobe of the lung. In addition, the sign of congestion were seen around the nodule. To determine its cause, all the left lobe of the lung was sent to parasitology laboratory. In the laboratory, using a scalpel, a small slice was done on the nodule. In the nodule the white piece were observed which were doubted to be nymph of *L. serrata* parasite. To study more carefully, the completely left lobe of lung was examined

based on digestion method and so the sample was divided to smaller pieces. Then samples were digested in 200 ml of pre-heated digestion fluid containing 5g pepsin (7178, Merck) and 25 ml hydrochloric acid (374, Merck) in 1000 ml distilled water, and incubated at 37°C for 24 h (2). Finally, using a stereomicroscope, one nymph of *L. serrata* was collected and identified (Fig. 1).



Fig. 1: *Linguatula serrata* nymph isolated from lung under a stereomicroscope (×25)

Discussion

Linguatulosis poses veterinary and public health importance in the world including Iran. As intermediate host, one-humped or two-humped camel, like the other ruminants, may play a vital role in the life cycle of *L. serrata*. As the camels are mostly kept freely in the pastures, they are very susceptible in persistence of infection and its dissemination (8).

There are already many reports on the infection of one-humped camel, to nymph of *L. serrata* as well as cattle, sheep and goat in Iran (9-12). In literature, the most infected organs of one humped camel are reported to be mesenteric lymph nodes, liver and lung respectively (3, 8).

Two-humped camel is merely found in cold regions of Iran (Ardabil and East Azerbaijan provinces) in the western north of country and

is in danger of extinction. Today there are less than 100 two-humped camels throughout Iran. Small population of two-humped camel in Iran leads to lack of information about their infections. This is the first report of *L. serrata* infection in two-humped camel in Iran.

References

1. Shekarforoush SS, Arzani P. The study of prevalence rate of *L. serrata* nymphs in liver of sheep, goat and cattle in Shahre-kord, Iran. *Iranian J Vet Res.* 2001;2: 57-62.
2. Shekarforoush SS, Razavi SM, Izadi M. Prevalence of *Linguatula serrata* nymphs in sheep in Shiraz, Iran. *Small Ruminant Research.* 2004;52:99-101.
3. Shakerian A, Shekarforoush SS, Ghafari Rad H. Prevalence of *Linguatula serrata* nymphs in one-humped camel (*Camelus dromedarius*) in Najaf-Abad, Iran. *Research in Veterinary Science.* 2008;84:243-245.
4. Lazo RF, Hidalgo E, Lazo JE, Bermeo A, Llaguno M, Murillo J, Teixeira VPA. Ocular Linguatuliiasis in Ecuador: Case report and morphometric study of the larva of *Linguatula serrata*. *Am J Trop Med Hyg.* 1999;60(3):405-409.
5. Anaraki Mohammadi G, Mobedi I, Ariaiepour M, Pourmohammadi Z, Zare Bidaki M. A case report of Nasopharyngeal Linguatuliiasis in Tehran, Iran and characterization of the isolated *Linguatula serrata*. *Iranian J Parasitol.* 2008;3(1):53-55.
6. Meshgi B, Asgarian O. Prevalence of *Linguatula serrata* in stray dogs of Shahrekord, Iran. *Journal of Veterinary Medicine Series B,* 2003; 50(9):466-467.
7. Yeganeh Moghadam A, Talari SA, Dehghani R. A case of Human *Linguatula serrata* infestation in Kashan, Iran. *Journal of Kerman University of Medical sciences.* 2001;8(3): 175-178.
8. Tajik H, Tavassoli M, Khani H, Javadi S. Prevalence of *Linguatula serrata* nymphs in slaughtered camels of Iran. *Journal of Camel Practice and Research.* 2007;14:69-71.
9. Tavassoli M, Tajik H, Dalir-Naghadeh B, Hariri F. Prevalence of *Linguatula serrata* nymphs and gross changes of infected mesenteric lymph nodes in sheep in Urmia, Iran. *Small Ruminant Research.* 2007;72:73-76.
10. Rahman MH, Mondal MMH and Haq S. On the occurrence of *Linguatula serrata* nymphs in goats and cattle of Mymensingh District, Bangladesh. *Bangladesh Vet J.* 1980;14: 41-44.
11. Razavi SM, Shekarforoush SS, Izadi M. Prevalence of *Linguatula serrata* nymphs in goats in Shiraz, Iran. *Small Ruminant Research.* 2004;54: 213-217.
12. Tajik H, Tavassoli M, Dalir-Naghadeh B, Danehloipour M. Mesenteric lymph nodes in infection with *Linguatula serrata* nymphs in cattle. *Iranian Journal of veterinary Research, University of Shiraz.* 2006;7:82-85.