Prevalence of *Linguatula serrata* Nymphs in Cattle in Babol Slaughterhouse, North of Iran 2010

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**Abstract:** The *Linguatula serrata* is one of the parasitic zoonoses. 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. Over a 3-month period, 135 slaughtered cattle were selected randomly. Samples were collected from equal numbers of males and females. Twenty of 135 (14.8%) cattle were infected with nymph stages of *L. serrata* in their mesenteric lymph nodes, three and one lung and liver of 135 cattle were infected with Linguatula serrata larva. Considering results, it could be concluded that prevalence of infection in cattle is high and emphasized the need for more investigation on mesenteric lymph nodes in cattle.

**Key words:** Linguatula serrata · Zoonoses · Halzoun syndrome · Mesenteric lymph nodes · Cattle

**INTRODUCTION**

The phylum pentastomida consists of about 100 species of endoparasites of the respiratory tract of vertebrates. Of importance in veterinary and human medicine are the two families Linguatulidae and Procephalidae of which species of the genus Linguatula and Armillifer are parasites of zoonotic importance [1]. *Linguatula serrata* is a cosmopolitan parasite. The adult stage occurs in the nasal and respiratory passages of the dog, fox and wolf, more rarely in man, horse, goat and sheep. The parasite is tongue-shaped, lightly convex dorsally and flattened ventrally. The cuticle is transversely striated. Males measure 1.8-2 cm, while females measure 8-13 cm in length. Eggs measure about 90×70 μm [2]. Some of herbivores animals can act as intermediate hosts following ingestion of eggs. The eggs hatch and larvae emerge in the alimentary canal eventually migrating to various internal organs and tissues transforming into nymphs that become encapsulated [3]. This parasite has been reported in humans in Iran with clinical signs of nasopharyngeal symptoms including sneezing, coughing and nasal discharge following consumption of barbecued liver [4, 5].

Consuming raw or under-cooked liver is not unusual in some part of Iran particularly in pregnant women. It is thought among some women, that consumption of raw or undercooked liver is helpful for growth of the fetus because of its high content of iron and vitamins. Several studies have been conducted on the prevalence rate of *L. serrata* in dogs, camels, buffaloes, sheep and goat [6-8, 10, 12]. The aim of this study was to determine the prevalence rate of *L. serrata* nymphs in mesenteric lymph nodes, liver and lung of cattle slaughtered at Babol, Mazandaran, Iran slaughterhouse.

**MATERIALS AND METHODS**

Over a 3-month period, 135 slaughtered cattle were randomly selected. Samples were collected from equal numbers of males and females. Samples were cut into small pieces (approximately 1.5 × 1.5 cm² in size) immersed in normal saline (0.9% NaCl) solution incubated for 5-6 hours to allow nymphs to emerge from tissue. Recovered nymphs were flattened, dehydrated in ascending grades of ethyl alcohol and cleared in creosote before examining under low power objective of microscope. The parasites were identified based on Soulsby [11]. Then the negative samples were digested in 200 ml of digestion solution (5 g of pepsin, 25 ml hydrochloric acid in 1000 ml distilled water) and incubated at 37°C for 24 h.

**RESULTS**

The morphology of the parasites and the site from which they were obtained indicated that they were all nymphs of *L. serrata* (Fig 1). Recovered parasites were
grey-white in color, each measuring 3 - 6 mm in length and approximately 1 mm wide (before fixation), tongue-shaped with obvious external pseudo-segmentation of the body. The anterior end of the body revealed two pairs of stickle-shaped binate hooks located on the side of the oral cavity for use in attachment (Fig 2). The outer chitinous cuticle revealed the presence of body rings with minute spines. The posterior end was slightly rounded.

Twenty of 135 (14.8%) cattle were infected with nymph stages of *L. serrata* in their mesenteric lymph nodes, three and one lunge and liver of 135 cattle were infected with Linguatula serrata larva (Table 1). Mean of larva length was 4.5±0.4 cm.

**DISCUSSION**

Several studies have been conducted in Iran to determine the prevalence of linguatulosis in ruminants. Prevalence rates of 44% was recorded in cattle in Urmia slaughterhouse, Iran [8]. Nourollahi Fard in Kerman reported prevalence of 16.22% in mesenteric lymph nodes in cattle [13].

In the present study, prevalence rates of 14.8, 2.2 and 0.7% were observed in cattle Mesenteric lymph nodes, lunge and liver, respectively. High prevalence rate of infection in this area may be a manifestation of climatic parameters that enhance survival of parasite eggs in vegetables, fruits and water resources and possibly, the suitable temperature and humidity play important roles in the epidemiology of this infection.

Muraleedharan and Zaki [14] found *L. serrata* in 5 out of 42 cattle (11.9%) examined at Bangalore, South India and Sivakumar et al. [15] reported only 2 out of 100 buffaloes infected in Bareilly, North India. Also Ravindran et al. [16] in south India found that out of 100 goats, cattle and buffalos examined, the prevalence of visceral linguatulosis was 21, 19 and 8%, respectively.

It is believed among some women, particularly of tribal origin, that consuming raw or under-cooked liver of sheep and goats is useful for growth of the fetus because of its high content of iron and vitamins. Some clinical cases of human nasopharyngeal linguatulosis in Iran have been reported. The clinical signs were pharyngitis, salivation, dysphagia and coughing which appear shortly after consuming the infected edible offal [12].

Considering results, it could be concluded that prevalence of infection in cattle is high and emphasized the need for more investigation on their mesenteric lymph nodes. Larval or nymphal infection is asymptomatic in herbivores. Larval and nymphal stages of *L. serrata* in humans were previously reported from Iran.
Human infection is as the result of ingestion of third stage larvae of _L. serrata_ found in raw liver or lymph nodes of sheep, goats and cattle. Ingestion of _L. serrata_ nymphs can cause halzoun or mararah syndrome. Because of the veterinary and medical importance of linguatulosis, we suggest that further serious investigation be conducted in both carnivores and herbivores.

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**REFERENCES**