Short Paper

Mesenteric lymph nodes infection with *Linguatula serrata* nymphs in cattle

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Summary

871 mesenteric lymph nodes taken from 110 native cattle from Urmia slaughter-house with different ages were examined for *Linguatula serrata* infection. The lymph nodes were studied based on their colour and consistency. 44% of the cattle were found positive for *L. serrata* infection. The number of parasites isolated from each infected lymph node varied from 1 to 69 with a mean of 5.48. There were no significant differences in the number of parasites in different age groups. The study underlined the need for a more thorough investigation of mesenteric lymph nodes inspection in the cattle of this region.

Key words: Mesenteric lymph nodes, Cattle, *Linguatula serrata*, Pentastomida

Introduction

Linguatula serrata, an aberrant arthropod of the class Pentastomida, ranging in length from 1.8–2 cm in males and 8–13 cm in females (Hendrix, 1998), shaped like an elongated tongue and has a small mouth and minute claws. Adults *L. serrata,* parasitize the nasopharynx of canids (Khalil and Schacher, 1965). Consuming uncooked offal containing cysts infects dogs. *L. serrata* is zoonotic which means its eggs and nymphs can infect man. In fact, infections result from eating raw glandular material of infected cattle, sheep, goats, etc. Infections after eating the nymph stage in man are established in the nasopharynx.

Infections by adult *L. serrata* in stray dogs were reported as 43% in Beirut (Khalil and Schacher, 1965) and 8% in Cairo (Khalil, 1970). In another work by Akyol *et al*., (1995), infections in male and female dogs were found to be 25.8 and 10.5%, respectively. In Turkey infection in dogs were recorded as 10% and 0.81% (Guclu and Aydenizoz, 1995; Aydenizoz and Guclu, 1997). Other workers in Iran reported the infection rate in stray dogs as 62.2% (Meshki and Asgarian, 2003), 1.13% (Tavassoli *et al*., 2000), 55% (Razmaraii *et al*., 2002) and 76.47% (Oryan *et al*., 1997). Nymph of *L. serrata* in domestic animals was found with a frequency of 8.7% in goat in Sudan (Yagi *et al*., 1996) and 1.4% in cattle in Turkey (Celep *et al*., 1990). The frequency of linguatulosis in domestic farm species were reported in different regions of Iran; 0.23% in goats (Saiyari *et al*., 1996), 12.5% in camels (Oryan *et al*., 1993), 28.3% (Jamali *et al*., 1997) and 8.67% in cattle (Valenzuela *et al*., 1995), 33.9% in small ruminants (Esmail-Nia *et al*., 2000), and 0.45% in sheep (Shekarforoush and Arzani, 2001). Linguatolosis in human was reported by several authors in Iran (Arbabi *et al*., 1996; Sajadi and Ardehali, 1996; Montazeri *et al*., 1997; Maleky, 2001). Here we describes the frequency of *L. serrata* infection and its induced gross changes in lymph nodes of the cattle of Urmia slaughter-house.

Materials and Methods

Mesenteric lymph nodes of 110 native

cattle with different ages slaughtered in Urmia slaughter-house, northwest of Iran, were examined for infection with *L. serrata* between September (2001) and July (2002). The animals were categorized into three age groups (*i.e.*, ≤2 years, 2–4, and ≥4 years of age). The number of collected lymph nodes from each cattle varied from 1 to 10 with a total number of 871. Lymph nodes of each animal were placed in a separate bottle containing normal saline and transferred to the laboratory. Lymph nodes were opened longitudinally, put in petri dishes with the saline and examined under a dissecting microscope for *L. serrata* nymphs. The total numbers of nymphs per lymph nodes were recorded.

Statistical analysis

To compare relative frequency of infection among different age groups, χ^2 test was used. The results were considered significant at $p<0.05$.

Results

Forty-eight (44%) of 110 native cattle were found positive for *L. serrata* infection. Nymphal stages of *L. serrata* were found in 143 (16.4%) of mesenteric lymph nodes.

Table 1 shows the prevalence of infection in different age groups. Among the three age groups studied, no statistically significant differences were noted. The number of isolated parasites from each infected lymph node varied from 1 to 69 with a mean of 5.48 (Table 2).

Table 1: Relative frequency of *L. serrata* infection in age groups

Age groups	≤2 years	2-4 years	≥4 years	Total
Lymph status				
Non-infected count	107	312	283	728
% Within lymph status	14.7%	42.9%	38.9%	100%
% Within age groups	83.6%	82.5%	77.5%	83.6%
% Of total	12.3%	35.8%	32.5%	83.6%
Infected Count	21	66	56	143
% Within lymph status	14.7%	46.2%	39.2%	100%
% Within age groups	16.4%	17.5%	15.3%	16.4%
% Of total	2.4%	7.9%	6.4%	16.4
Total count	128	378	365	871
% Within lymph status	14.7%	43.4%	41.9%	100%
% Within age groups	100%	100%	100%	100%
% Of total	14.7%	43.4%	41.9%	100%

Table 2: Comparison of mean number of *L. serrata* nymphs in various age groups

Age (year)	No. of infected lymph node	Mean	Std. error	Range
≤2 years	21	1.6190	0.2124	1-4
2-4 years	66	4.3939	0.9962	1-48
≥4 years	56	8.2321	2.1458	1-69
Total	143	5.4895	0.9743	1-69

No significant difference was noted

Discussion

Our results indicated a high rate of infection of lymph nodes of cattle with *L. serrata* (43.63%) in Urmia. The results are in agreement with the previous findings in sheep (28.3%) and goat (33.9%) in Tabriz (Jamali *et al*., 1997), Babol (36.5%) (Esmail-Nia *et al*., 2000) and Urmia (21.47%) (Hariri, 2001; Lotfi, 2001).

Although, the prevalence of *L. serrata* in cattle is high, it seems that the cattle has little role in the epidemiology of this parasite in comparison with small ruminant in different parts of Iran. The smaller role of the cattle in the epidemiology of *L. serrata* in Iran can be ascribed to the presence of lower number of nymphs per each lymph node in cattle in comparison with sheep and goat. The presence of *L. serrata* indicated that human infections could potentially be acquired from eating raw or under-cooked visceral organs of cattle in either of these habitants. Due to consumption of raw or under-cooked liver and visceral organs of cattle with people in this region, the importance of this parasite is very notice-able.

The response of a lymph node to an irritant is normally rapid, involving enlargement, congestion and possibly tissue breakdown; thus, the size, colour and consistency of lymph nodes are valuable diagnostic guides (Gracey, 1981). The examination of the lymph nodes of the carcase is perhaps the most valuable guide

as to the nature and extent of toxaemia or septicaemia. Changes in size, colour and consistency of the lymph nodes are also valuable indications in acute septicaemic or pyaemic conditions (Gracey, 1981). In this study, significant difference was noted between numbers of *L. serrata* and the gross appearance of lymph nodes. The lower rate of infection was seen in normal nymph nodes ($P<0.05$).

This study emphasized the need for a more thorough investigation on mesenteric lymph nodes inspection in cattle in this region. When the mesenteric lymph nodes are soft and they are red or black, the mesenteric fat should be condemned and destroyed.

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