Screening of Zoonotic Fascioliasis of Slaughtered Large Ruminants in Abattoir in Perak, Malaysia

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Abstract: Fascioliasis or trematode infestation was an important disease caused by *Fasciola hepatica* and *F. gigantica*. Both species were hepatic parasites and have been found to affect human. The zoonotic aspects of fascioliasis were described. A total of 80 fresh liver samples from 67 of Kedah-Kelantan crossbred cattle and 13 Murrah buffalo were inspected from 4 local abattoirs in Perak. A total of 57 liver samples from 67 cattle and 13 Murrah buffalo were inspected. All samples were examined macroscopically for the presence of *Fasciola* spp. The results showed that 7.50% (6 out of 80) of the samples were positive for fascioliasis. Among the cattle samples, 7.46% (5 out of 67) and 7.69% (1 out of 13) were positive for *Fasciola hepatica* and *F. gigantica* respectively. The results indicate that the impact of zoonotic fascioliasis on public health is significant. Further research is needed to understand the epidemiology and transmission of fascioliasis in Malaysia.

Kata kunci: Fascioliasis, trematodes, zoonotic


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Perak. The samples were examined macroscopically to detect the presence of *Fasciola* spp. Results show 7.50% (6 of 80) of the animals were diagnosed with fascioliasis. Overall, 7.46% (5 of 67) and 7.69% (1 of 13) were detected positive from cattle and buffalo sample respectively. Only *F. gigantica* were detected upon species identification. The precaution should be taken as the disease has it zoonotic impact on public health.

**Keywords:** Fascioliasis, trematode, zoonotic

**INTRODUCTION**

Fascioliasis or trematode infestation is an important disease caused by *Fasciola hepatica* and *Fasciola gigantica*. Both species are hepatic parasites and were considered as plant-borne trematodes that have been found to affect human (Mas-Coma *et al.* 2005). In the Third Global Meeting of the Partners for Parasites Control held in WHO Headquarters Geneva in November 2004, fascioliasis was added to the list of important helminthiases with a great impact on human development (Anonymous 2004). In Malaysia, according to a survey in 1972, animal fascioliasis were found only in the states of Kedah, Perak, Selangor, Pahang, Negeri Sembilan, Malacca and Johore, and no cases of human fascioliasis were reported (Saleha 1991). A study by Naim *et al.* (2011) in Ipoh, Perak abattoir shows the presence of fascioliasis in slaughtered large ruminants.

*Fasciola hepatica* and *F. gigantica* which also the common liver flukes or flat worms in large ruminants require fresh water snails, *Lymnaea* spp. as an intermediate host. The miracidia that released from an embryoinated fluke eggs will invade the snail and undergo several developmental stages includes sporocyst, rediae and cercariae in five to seven weeks under optimal conditions. The free swimming cercariae were then released in the water and encyst as metacercariae. The metacercariae is the infective larvae with a hard outer cyst wall and can survive for prolonged periods in wets environment and on aquatic vegetation. Large ruminants and humans acquire the infection by accidentally eating the fresh vegetation containing the infective metacercariae. The ingested larvae will excyst in the duodenum and migrate through the intestinal wall, the peritoneal cavity, and the liver parenchyma into the biliary ducts and develop into an adult flukes. In humans, it takes three to four
months for the metacercariae matured into an adult flukes. The released of unembryonated fluke eggs from the bile duct that passed in the faeces complete the life cycle of the parasites (CDC 2013).

The aim of this study is to detect the presence and identify *Fasciola* spp. in large ruminant in Perak, Malaysia.

**MATERIALS AND METHOD**

In this study, a total of eighty (n = 80) fresh liver samples from sixty seven of Kedah-Kelantan crossbred cattle and thirteen Murrah buffalo were inspected from 4 abattoirs in Perak (Ipoh, Taiping, Teluk Intan and Tapah). The samples were examined macroscopically after slaughtered commencing from February 2013 to August 2013. All the suspected liver samples with serious damaged of the tissues and subject to condemnation during the meat inspection were stored at 4° to 6°C and transported to Parasitology Laboratory of Veterinary Research Institute (VRI) for further examination using the stereo microscope (Olympus SZ51, Japan). The flukes were then collected for species identification.

The flukes collected were identified according to their morphology by morphometric methods described for *Fasciola* by Periago *et al.* (2008).

**RESULTS AND DISCUSSION**

As a result, out of 80 large ruminants, 6 (7.50 %) animals were diagnosed with fascioliasis. 7.46 % (5 of 67) and 7.69 % (1 of 13) were detected positive from cattle and buffalo sample respectively. Based on the results, only *F. gigantica* were detected upon examination.

The findings of this study shows the prevalence rate for fascioliasis in large ruminants slaughtered in Perak is at 7.50 %. According to Pfukenyi *et al.* (2006) *F. gigantica* or giant liver fluke infection is one of the most common single helminth infections of ruminants in Asia and Africa. The adult fluke is oval, operculated with thin shelled and slightly larger (up to 75 mm) than *F. hepatica* (up to 30 mm), with clearly defined shoulders (Kahn *et al.* 2005).
The infected animals show a wide range in severity from an asymptomatic infection to a devastating disease related to the liver fluke burden. Migration of the parasites at the liver develops an uneven surface appearance with migratory tract and encourages liver condemnation during meat inspection process. Besides reduction in body weight and reduce weight gain, the infestation may also cause the reduction in milk quality and production (Chick 1980).

In human, fascioliasis was first documented in 1970, during an autopsy of a female in Berlin, Germany (Groove 1990). The clinical manifestation of the disease includes fever, dyspepsia, anorexia, ascites, urticaria and jaundice in acute stage and, nausea, fatty food intolerance, cholangitis, pancreatitis and cholecystitis in chronic infection (Khandelwal et al. 2008). Human fascioliasis was reported to be common in Cuba, Uruguay and Argentina. Human usually accidentally infected by eating green leafy raw aquatic plants that grows in fresh water, such as watercress (Nasturtium officinale) with encysted metacercariae (Saleha 1991).

As prevention, the population of intermediate host for *F. gigantica* should be control. The used of molluscicides is suggested in reducing the number of snails. Prevention of livestock access to snail-infested pasture also is recommended in reducing the potential of infestation. Human fascioliasis can be prevented by strict control of watercress and other metacercariae-carrying aquatic plants for human consumption. Consuming of undercooked or raw liver dishes should be avoided as a study by Taira et al. (1997) stated that humans might get infected after ingested immature flukes from the raw dishes. The used of anthelmentic such as Triclabendazole is at present the drug of choice for animals and human fascioliasis caused by both *F. gigantica* and *F. hepatica* (Mas-Coma et al. 2005).

**CONCLUSION**

In conclusion, fascioliasis is an important helminthiasis disease in large ruminant and is listed as potential disease that has great impact on human development. Even though the prevalence rate for this study is low and there was no reported case of human fascioliasis in Malaysia, the precaution should be taken as the disease has it zoonotic impact.
ACKNOWLEDGEMENT

The study was funded by Veterinary Research Institute, Department of Veterinary Services (Zoonotic Section Internal Fund). The authors are grateful to Dr. Ramlan Mohamed, the Director, Veterinary Research Institute for his full support during this study.

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