

Short Communication

**ANGIOSTRONGYLUS CANTONENSIS (NEMATODA,
METASTRONGYLIDAE) IN BANDICOOT RATS IN
KERALA, SOUTH INDIA**

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ABSTRACT

Angiostrongylus cantonensis, the causative agent of eosinophilic meningoencephalitis was reported from bandicoot rats in Kerala. The presence of *A. cantonensis* in bandicoot rats in Kerala is quite appalling as it is considered as an emerging pathogen. Since human rat contacts are ineluctable, chances of transmission are very high. Regular surveillance and awareness programmes are recommended.

Keywords: *Angiostrongylus cantonensis*, Kerala, Bandicoot rats, Emerging pathogen.

Angiostrongylus cantonensis, a zoonotic rodent nematode, discovered from pulmonary arteries and hearts of domestic rats captured from Guangzhou (Canton), China, by Chen in 1935 (Chen, 1935). *A. cantonensis* occasionally causes human Angiostrongyliasis with meningeal inflammation and eosinophilic pleocytosis in the cerebrospinal fluid and is clinically termed as eosinophilic meningoencephalitis. Humans become infected by ingesting intermediate hosts, such as snails and slugs, or transport/paratenic hosts, such as freshwater crustaceans, that contain viable third-stage larvae which migrate to the central nervous system after ingestion and cause eosinophilic meningoencephalitis (Hughes *et al.*, 2003; Hochberg *et al.*, 2007). The natural definitive hosts are rats, especially species of *Rattus rattus*, *Rattus exulans*, *Rattus norvegicus*, *Bandicota indica* and *Bandicota bengalensis* (Namue and Wongsawad, 1997 and Pipitgool *et al.*, 1997).

Farmers are regularly trapping rats to prevent crop damage and such trapped rats in December

2013 were used for the study. The examination of bandicoot rats (*Bandicota indica*) from agricultural areas of Kottayam district, Kerala, India, detected worms in cardiopulmonary system which had characteristic features of *Angiostrongylus*, including size, prominent dark intestine and typical body shape with barber's pole appearance. This is the first report of *A. cantonensis* among bandicoot rats in Kerala.

The presence of *A. cantonensis* among wild rats is observed by many researchers worldwide such as, from Indonesia (Stafford *et al.*, 1976); Papua New Guinea (Scrimgeour, 1984); Taiwan (Chunhung, and Kauhung, 2000); Jamaica (Lindo *et al.*, 2002) and West Indies (Chikwetoa *et al.*, 2009). *A. cantonensis*, is endemic in south Asia, Pacific islands, Australia, and Caribbean islands. Human infections due to *A. cantonensis* are reported from various parts of India too (Wang *et al.*, 2008). Panackel *et al.* (2006) and Parameswaran (2006) established 13 cases of human angiostrongyliasis from Kottayam, Kerala after eating monitor lizard.

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The presence of *A. cantonensis* in bandicoot rats in Kerala is alarming as it is considered as an emerging pathogen with severe pathognomonic features. As human rat contacts are unavoidable, chances of transmission and host cyclicality are extremely important. Regular surveillance programmes are needed to find out the existing status of this neglected zoonosis - eosinophilic meningo-encephalitis due to *A. cantonensis*.

REFERENCES

- Chen, H.T., 1935. A new pulmonary nematode of rats, *Pulmonema cantonensis* ng, nsp from Canton. *Ann. Parasitol.*, 13: 312-317.
- Chikwetoa, A., Bhaiyata, M.I., Macphersonb, C.N.L., DeAlliea, C., Pinckneya, R.D., Richardsa, C. and Sharmaa, R.N. 2009. Existence of *Angiostrongylus cantonensis* in rats (*Rattus norvegicus*) in Grenada, West Indies. *Vet. Parasitol.*, 162(1-2):160-162.
- Chunhung, Y. and Kauhung, L. 2000. Survey of *Angiostrongylus cantonensis* and *Capillaria hepatica* in field rodents in Taiwan. *Taiwan J. Vet. Med Anim. Husb.*, 70: 3(4):51-57.
- Hochberg, N.S., Park, S.Y., Blackburn, B.G., Sejvar, K., Gaynor, S.J., Chung, H., Leniek, K., Herwaldt, B.L. and Effler, P.V. 2007. Distribution of eosinophilic meningitis cases attributable to *Angiostrongylus cantonensis*, Hawaii. *Emerg. Infect. Dis.*, 13(11):1675-1680.
- Hughes, P.A., Magnet, A.D. and Fishbain, J.T. 2003. Eosinophilic meningitis: A case series report and review of the literature. *Mil. Med.*, 168: 817-821.
- Lindo, J.F., Waugh, C., Hall, J., Cunningham-Myrie, C., Ashley, D., Eberhard, M.L., Sullivan, J.J. Bishop, H.S., Robinson, D.G., Holtz, T. and Robinson, R.D., 2002. Enzootic *Angiostrongylus cantonensis* in rats and snails after an outbreak of human eosinophilic meningitis, Jamaica. *Emerg. Infect. Dis.*, 8(3):324-326.
- Namue, C. and Wongsawad, C. 1997. A survey of helminth infection in rats (*Rattus* spp.) from Chiang Mai Moat. *Southeast Asian J. Trop. Med. Public Health*, 28 (Suppl.1):179-183.
- Panackel, C., Cherian, G., Vijayakumar, K. and Sharma, R.N. 2006. Eosinophilic meningitis due to *Angiostrongylus cantonensis*. *Indian J. Med. Microbiol.* 24: 220-221.
- Parameswaran, K. 2006. Case series of eosinophilic meningoencephalitis from South India. *Ann. Indian Acad. Neurol.* 9:217-222.
- Pipitgool, V., Sithithaworn, P., Pongmuttasaya, P. and Hinz, E. 1997. *Angiostrongylus* infections in rats and snails in northeast Thailand. *Southeast Asian J. Trop. Med. Public Health*, 8(Suppl.1):190-193.
- Scrimgeour, E.M. 1984. Distribution of *Angiostrongylus cantonensis* in Papua New Guinea. *Trans. R. Soc. Trop. Med. Hyg.*, 78(6):776-779.
- Stafford, E.E., Sukeri, S. and Sutanti, T. 1976. The bandicoot rat, a new host record for *Angiostrongylus cantonensis* in Indonesia. *Southeast Asian J. Trop. Med. Public Health*. 1:41-44.
- Wang, Q.P., De-Hua L., Zhu, X.Q., Chen, X.G. and Lun, Z.R. 2008. Human *Angiostrongyliasis*. *Lancet Infect. Dis.* 8:621-630.