



## **Original Article**

### **Survey and diagnostic study of parasitic pneumonia in cats in Al-Qasim district /Babel governorate/Iraq**

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## **ABSTRACT**

The study was carried out in Al-Qasim district/Babel governorate –Iraq, where 16 feral cats were captured and searched for parasitic pneumonia .The results showed that 5 out of 16 cats were infested with lung worm (31.25%). All infested cats demonstrated various degrees of respiratory signs in addition to obvious eosinophilia .The gross examination of infested lungs showed apparent consolidation as well as to pulmonary congestion and emphysema, while the microscopic investigation revealed emphysema, alveolar compression, congested blood vessels and presence of parasite eggs in numerous alveoli.

**Keywords:** cat, parasitic pneumonia, histopathology, *Aelurostrongylus abstrusus*

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To cite this article: Hayder M. Al-Rammahi and Ahmed Hameed Al-thebhawee, 2012. Survey and diagnostic study of parasitic pneumonia in cats in Al-Qasim district /Babel governorate/Iraq Mirror of Research in Veterinary Sciences and Animals. MRVSA 1(1), 57-60.

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## **Introduction**

The feline lungworm *Aelurostrongylus abstrusus* is one of the most common, worldwide distributed lungworms of cats (Scott, 1973).This prostrongylid worm has an indirect life cycle (Soulsby, 1965).The adults worms live in the bronchioles and terminal ducts, and the eggs form nodular deposits in the alveoli, then the eggs developed into first stage larvae that are coughed and swallowed to pass in feces (Anderson, 2000). The cats become infected by eating an infected intermediate or paratenic hosts ,the main intermediate host is either terrestrial or aquatic snails ,while many species of birds ,rodents ,frogs and lizards serves as paratenic host (Dwight et al,2002).

*Aelurostrongylus abstrusus* cause symptomless infection, however in severe infection, some signs such as coughing ,sneezing and polypnea are seen (Losonsky et al, 1983 ).

Since there are no references about diagnosis of *Aelurostrongylosis* in Iraq ,the aims of present study was designed to describe the incidence *Aelurostrongylus abstrusus* in addition to study of gross pathological and histopathological changes of infested lungs.

## Materials and Methods

The study was carried out in Al-Qassim district /Babel governorate at January 2012. Sixteen feral cats aged between 2 to 5 years were captured and brought for post mortem examination in the college of Veterinary Medicine /University of Babylon This study was approved by the research committee / College of veterinary medicine /Al-Qasim green university/Iraq. All cats were anesthetized by intramuscular injection with mixture of ketamin (OBOI, laboratories /India) and xylazin (Interchemie/Holland) in dose of 10 mg and 0.15 mg/kg b.w. respectively(James ,1995). Before performing of euthanasia, the lungs of each animal were clinically examined by auscultation and the blood samples were collected from cephalic vein and transferred in cool box for haematological examination (McCumin, and Bassert , 2002 ). General necropsy examination was done with special attention to respiratory system ,where the later was dissected and removed entirely from thoracic cavity , examined carefully for worms and/or any pathological lesion .Tissue specimens were preserved in 10% buffered formalin and then sectioned in Al-Sader teaching hospital laboratory in Al-najaf province for preparation of histological slides of 5 µm thickness.

## Results

The parasitic pneumonia was confirmed in 5 out of 16 feral cats in percentage rate 31.25%. All infested animals demonstrated abnormal respiratory sounds include crackles , wheezes and moist rales , in addition to obvious eosinophilia which observed in blood samples obtained from these animals . The results of gross examination of respiratory system revealed presence of various pathological lesions in all 5 cats, include apparent consolidation of lungs ,pulmonary congestion ,emphysema and the bronchi was filled with mucopurulent discharge (Figure. 1),while the worms were recovered from only 2 cats (Figure. 2).

The histopathological examination of lungs revealed obvious emphysema with presence of compressed alveoli in some parts of lung sections, the pulmonary blood vessels were congested and surrounded by aggregated inflammatory cells ,many alveoli filled with parasite eggs with some cross section of adult worms ( figures 3- 6).

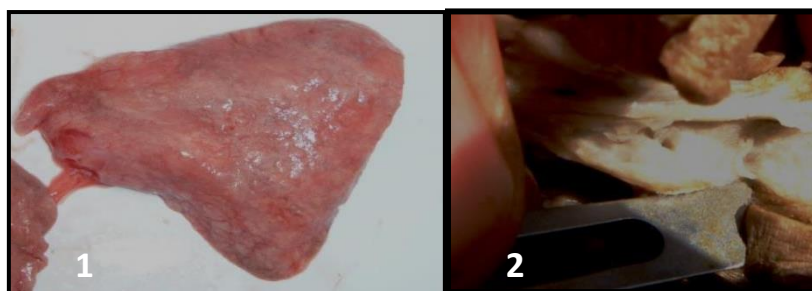


Figure 1, Shows the gross hepatization, emphysema and congestion of infected cat  
Figure 2, Shows the adult feline lung worm in bronchiole of infected lung.

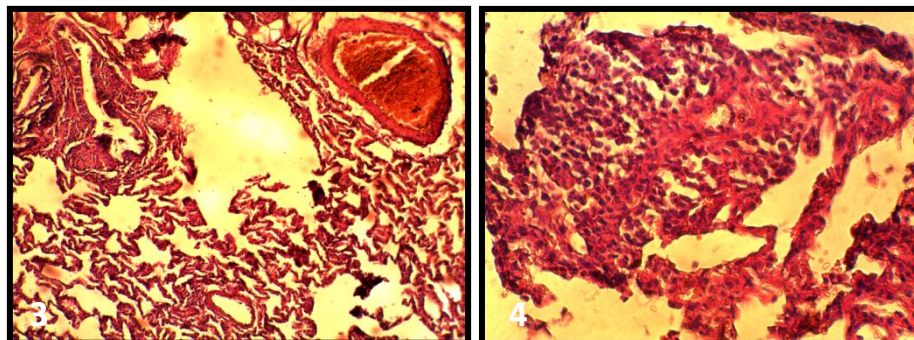


Figure 3, Shows congestion of blood vessels with inflammatory exudates in bronchiole.  
Figure 4, Shows sever inflammatory reaction in infected lung with compressed alveoli.

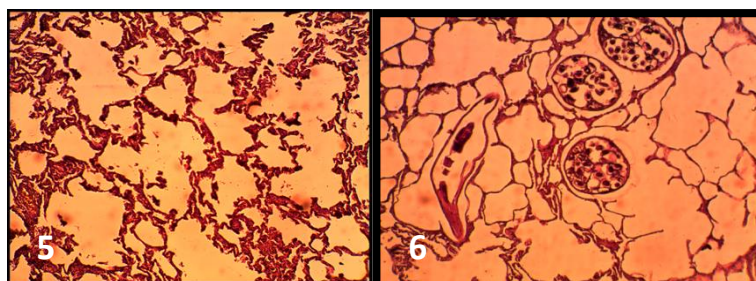


Figure 5, Shows the obvious emphysema of infected lung.  
Figure 6, Shows the presence of eggs of lung worm in alveoli

## Discussion

According to available references , the alone study about *Aelurostrongylus* in Iraq was carried by Al-Khalidi et al ,(1988) in Mosul province, where they first recorded the *Aelurostrongylus abstrusus* in Iraq. However, the parasite was recorded in many countries around the world including Croatia. (Grabarevic et al ,1999) , Turkey (Tuzer et al ,2002) , Australia (Mackerras,1957) , Argentina. (Schiaffi ,2002 ) , Kenya. (Gathumbi ,1991 ) and Italy (Grandi,2005).

Many authors (Dwight et al, 2002; Losonsky et al, 1983) suggested that most infection with *Aelurostrongylus abstrusus*, occurs without any clinical signs while others (Rawlings et al, 1980; Smith, 1980) recorded mild respiratory signs including coughing and abnormal respiratory sounds such as crackles, wheezes and moist rales. Most of these clinical signs were in agreement with the results of present study.

In general, the eosinophilia associated with allergy or parasitism (canine & feline), and the obvious eosinophilia in present study was in agreement with Center (Center, 1990), whose performed a retrospective study of 312 cases of cats with eosinophilia revealed that 2 percent of the cases were infected with *Aelurostrongylus abstrusus* while the majority of cases, 20.5%, had eosinophilia as a result of flea-bite allergy.

Identical to results of present study, Alliss et al, 2010 recorded that the main macroscopic changes in infested lungs were consolidation, congestion and purulent materials in bronchi.

The main microscopical changes in infested lungs observed in the present study were emphysema, compressed alveoli, thickening and congestion of blood vessels with presence of

numerous eggs in alveoli, these changes were compatible with findings of others (Stockdale, 1970). We conclude that feline lungworm *Aelurostrongylus abstrusus* occurred in Al-Qassim district /Babel governorate / Iraq at (31.25%). All infested cats demonstrated various degrees of respiratory signs and lead to gross and histopathological changes.

## References

- Al-Khalidi ,N,W ;Al-Alousi,T,I. And Subber ,A.H.(1988)** Internal and external parasites in cats in Mosul, Iraq. *Journal of Veterinary Parasitology*,2(2):137-138.
- Anderson, R.C.(2000)** Nematode Parasites of Vertebrates Their Development and Transmission.2<sup>nd</sup> ed. CABI Publishing.
- Center, S.A.; Randolph ,J.F.; Erb, H.N. and Reiter,S. (1990)**Eosinophilia in the cat: a retrospective study of 312 cases (1975–1986). *J. Am. Anim. Hosp .Assoc.* 26:349–358.
- Dwight, D. ;Bowman ,C. M. ; Hendrix D. S. ; Lindsay S. and Barr C. (2002).** feline clinical parasitology. Iowa State University Press. A Blackwell Science Company.
- Ellis, A. E.; Brown, C. A.and Yabsley, M.J. (2010)** *Aelurostrongylus abstrusus* larvae in the colon of two cats: A case report ,*J Vet Diagn Invest* 22:652–655 .
- Gathumbi, P.K.; Waruiru, R.M. and Buoro,I.( 1991)** A case of feline *A. abstrusus* infection in Kenya. *Bull. Anim. Hlth. Prod. Afr.*, 39: 361-363.
- Grabarevic Z, Curic S, Tustonja A (1999)** Incidence and regional distribution of the lungworm *Aelurostrongylus abstrusus* in cats in Croatia. *Veterinarski Arhiv* 69:279–287.
- Grandi, G. ;Calvi, L.E. and Venco, L. (2005)** *Aelurostrongylus abstrusus* (cat lungworm) infection in five cats from Italy. *Vet Parasitol* 134:177–182.
- James , A.E. (1995)** The laboratory cats. *ANZCCART News*,8(1):1-2.
- Losonsky, J.M.; Thrall, D.E. and Prestwood, A.K.(1983)**Radiographic evaluation of pulmonary abnormalities after *Aelurostrongylus abstrusus* inoculation in cats. *Am J. Vet. Res.*, 44(3), 478-482.
- Mackerras, M.J. (1957)** Observations on the life history of the cat lungworm, *Aelurostrongylus abstrusus* . *Aust. J. Zool.* , 5:188–195.
- McCumin, D.M. and Bassert, J.M. (2002)** Clinical text book of veterinary clinician, 5th edition, Philadelphia ,WB Saunders Company .
- Rawlings, C.A.; Losonsky, J.M.; Lewis, R.E.; Hubble, J.J. and Prestwood, A.K. (1980)** Response of the feline heart to *Aelurostrongylus abstrusus*. *J Am Anim Hosp Assoc* 16:573–578.
- Schiaffi, A.L. ; Bela, M.G. ; Bola, L.N. and Peruzzo,(2002).**L.E.:*Aelurostrongylus abstrusus*,Diagnosis in the city of Rosaria,Argentina. *Vet Argentina*, 12 (117): 480-483.
- Scott ,D.W. (1973)** Current knowledge of aelurostrongylosis in the cat. Literature review and case reports. *Cornell Vet.* 63:483–500.
- Smith, R.E. (1980)** Feline lungworm infection. *Vet Rec* 107:256.
- .Soulsby, E.J.L. (1965)** Textbook of Veterinary Clinical Parasitology. Vol I. Helminths. Blackwell, Oxford .
- Stockdale, P.H.(1970)** The pathogenesis of the lesions elicited by *Aelurostrongylus abstrusus* during its prepatent period. *Pathol Vet* 7:102–115.
- Tuzer,E. ;Toparlak ,m. ;Gargili ,A. ; Keles ,v. And Esatgil ,M.U.(2002)** A Case of *Aelurostrongylus abstrusus* Infection in a Cat in Üstanbul,Turkey and its Treatment with Moxidectin and Levamisole.*Turk. J. Vet Anim. Sci*,26:411-414.