SHORT COMMUNICATION

Indian. J. Vet. Res. Vol. 26 No. 2 2017: 52-54

Porcine metacestodiasis: A Prevalence study

Vijayakumar Jawalagatti, Sagarika Mishra*, Riddhi P. Pednekar and Mukulesh L. Gatne

Bombay Veterinary College, Parel, Mumbai (Maharashtra)-400012
*Email: sagarikamishra2021@gmail.com

[Received: 28. 11. 2016 Accepted: 30. 11. 2017]

Citation: Jawalagatti, S., Mishra, S., Pednekar, R.P. and Gatne, M. L.(2017). Porcine metacestodiasis: A prevalence study. *Indian. J. Vet. Res.* 26(2): 52-54.

ABSTRACT

A total of 2809 carcasses examined for presence of different metacestodes in pigs (April 2014 to September 2014) slaughtered at Deonar abattoir, Mumbai. The overall prevalence of bladder worm infections in slaughtered pigs was found to be 2.92 % with highest prevalence of *Cysticercus cellulosae* (1.35 %) followed by *Cysticercus tenuicollis* (1.14 %) and it was least for hydatid (0.75 %). Data showed a decline in the prevalence of porcine metacestodiasis in Mumbai and surrounding regions.

***Keywords*:** Cysticercosis, Metacestode Mumbai, Porcine, Prevalence

Pigs are host to different metacestode infections *viz*. *Cysticercus cellulosae*, hydatid and *Cysticercus tenuicollis*. Parasites are worldwide in distribution and are of tremendous importance from economic as well as public health point of view, as they cause life-threatening diseases like cysticercosis or hydatidosis in humans eating raw or under-cooked pork harbouring the larval forms [1]. Cysticercosis due to *Cysticercus cellulosae*, a larval stage of *Taenia solium* is of significant zoonotic importance. Humans infected with cysticercosis exhibit two forms of clinical disease, neurocysticercosis (NCC) and ocular cysticercosis. NCC is a very severe manifestation and about 26-50 % of the patients with partial seizures were diagnosed to have NCC [2]. Prevalence of cysticercosis and hydatidosis in pigs is suggestive of an active transmission of the parasite between pigs and humans. In the year 2007-08 alone a total number of 21,861 animals including 3888 pigs were found positive for hydatid cysts on post-mortem inspection at Deonar Abattoir, Mumbai [3]. Moreover, it is critical to ascertain the status of cysticercosis for identification of endemic areas and for development of strategies to control the infection. Hence, in this context a study was undertaken to note the prevalence of metacestodes in pigs slaughtered at Mumbai abattoir.

Survey plan and collection of parasitic material

As a part of the study a brief survey was conducted to note the prevalence of different types of metacestodes found in pigs slaughtered at Deonar abattoir, Mumbai. During the period of six months from April 2014 to September 2014, a total of 2809 carcasses were examined for presence of different metacestodes. The pigs were of either sex and are belonging to indigenous or crossbred categories. All the parasitic material collected from different sites of swine carcass isolated from the carcass and placed in separate containers and brought to the laboratory in big thermocol boxes having ice packs.

Processing of parasitic material

Cysticercii in the measly pork were separated by blunt dissection to recover them in intact condition. The cysts were washed twice with PBS before subjecting to morphological confirmation. Hydatid fluid (HF) was aspirated after cleaning the cyst wall with spirit swab. The fluid was then centrifuged (5000 rpm for 5min), supernatant was used as HF antigen and sediment

was examined under microscope to determine the fertility of each cyst.

Prevalence of porcine metacestodes

The overall prevalence rate of bladder worm infections in pigs was found to be 2.92% out of which 90.24% had pure infection showing only one type of metacestode in the carcass. Three types of bladder worms *viz. Cysticercus cellulosae, Cysticercus tenuicollis* and hydatid cysts, were detected in the survey. The literature search in context to findings of present study reveals that, the prevalence of porcine metacestodes in Mumbai, Maharashtra over the decades has been consistently declining [3,4]. This is obviously due to in general improvement in the level of hygiene and sanitary conditions owing to increasing awareness among the farmer community pertaining to economic and zoonotic significance of the bladder worms. This could also be due to the increase in the number of government-controlled abattoirs, where veterinary inspection of carcases and proper disposal of infected offal are strictly practiced

Prevalence of *Cysticercus cellulosae*

Amongst three different types of metacestodes encountered in the study, prevalence of *Cysticercus cellulosae* was highest (1.35%). The milky white coloured peanut sized cysts (Fig 1, 2) were encountered predominantly in skeletal muscles and less frequently in cardiac muscles. The cysts were not found in the visceral organs.

Prevalence of *Cysticercus tenuicollis*

The prevalence of *Cysticercus tenuicollis* (1.14%) was found to be slightly lower than that of *Cysticercus cellulosae* but distinctly higher than that of hydatidosis. Pathak and Gaur [5] have recorded a much higher prevalence rate of about 8.03% and Roy and Tandon [6] in their study have reported 5.26% prevalence of *Cysticercus tenuicollis* in pigs slaughtered at various abattoirs in Mizoram, Nagaland and Assam.

Prevalence of porcine hydatidosis

The prevalence of hydatidosis in pigs was found minimum (0.75%) as compared to

Fig.1: Shoulder muscle harbouring numerous *Cysticercus cellulosae* cysts

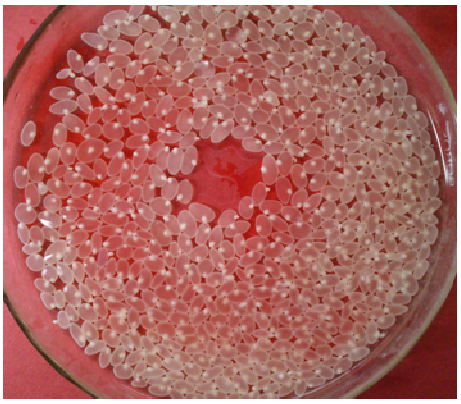

Fig. 2: *Cysticercus cellulosae* cysts separated from measly pork

Cysticercosis *viz. Cysticercus cellulosae* and *Cysticercus tenuicollis.*

Low prevalence of hydatidosis in pigs was also reported by, Irshadullah *et al*. [7] and Deka *et al*. [8] in Uttar Pradesh (1 %) and Assam (0.43 %), respectively. On the other hand, comparatively higher prevalence was recorded by Singh *et al*. [9] and Das and Das [10] in Bareilly (11.25 %) and Calcutta (8.0 %), respectively. However, Singh *et al*. [11] have recorded a moderate prevalence (3.09 %) of hydatidosis in pigs of Northern India. On the basis of site preferences noted in the present study, incisions of shoulder and neck muscles were recommended for detection of the *Cysticercus cellulosae* cysts in the musculature during meat inspection in the slaughter house as the tongue palpation method is the standard method of

detection employed at many abattoirs. Although, the prevalence of larval tapeworms in pigs slaughtered at Mumbai abattoir was on a declining trend, it was of paramount importance to control these infections so as to curb the economic losses and public health hazard associated with this group of parasites. Most importantly post mortem detection of the condition does not prevent the economic loss as the measly pork has to be condemned. In this context, ante-mortem detection by sero-diagnostic procedure allows the strategic curative chemotherapy such that production losses can be avoided to great extent.

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