



Overview of Cysticercosis in Peru and the Role of the Veterinary Doctor in its Control and Prevention

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Abstract

Cysticercosis is a zoonotic parasitic disease and a serious public health problem in developing countries, causing many losses in years of life in the population and economic losses due to the seizure of pig carcasses. This mini-review aims to give a general overview of the current state of this parasitosis in Peru in recent years through a specialized bibliographic review; as well as the role played by the veterinarian as a health professional, a group to which he recently joined. That is why actions must be taken against cysticercosis and teniasis, in addition to being studied in depth in order to project concrete data with which a future panorama can be envisioned where decisions are made for the good of human health and well-being animal.

Keywords: Cysticercosis; Veterinarian; Peru; Swine; Taeniasis

Introduction and Prevalences

Cysticercosis is undoubtedly one of the oldest diseases in the world that even health professionals have to deal with and face since the time of Ancient Egypt and Rome [1]. According to the WHO, around 2.8 million years of life are lost due to cysticercosis, ranking as an important food-borne disease along with *Fasciola hepatica*; identifying the highest prevalences in Africa, Asia and Latin America [2].

The high prevalences found in pigs suggest that the problem is still latent in public health; especially in less developed countries. For example, in countries like Nigeria the prevalence reaches 20%; and it is higher in hyperendemic areas such as Rwanda, the Democratic Republic of the Congo and Cameroon [3], while in student populations in marginal areas of China, cysticercosis can reach 15.6% [4]. The panorama in Latin America is not different, such is the case of Mexico where it is estimated 42% and 36% of cysticercosis in

pigs and humans, respectively, while in Peru the incidence of human cysticercosis is between 10% and 20% ; especially in people who lack drinking water and latrines, with backyard pig rearing [5,6].

Problems Faced

In Latin American countries such as Peru, the ignorance on the part of pig farmers about this disease has as a consequence an increase in the exposure and spread of this parasitosis [7]. That is why studies suggest high prevalences in pigs in various parts of the country; Such is the case of the capital city Lima with 18% prevalence in pigs, in Andahuaylas (Apuurimac) with 47% and not far from it is the Lambayeque Region, located on the north coast of the country, with 45.19% [8-10]. If we focus our attention on the Peruvian highlands, for example Puno, considered as a hyperendemic zone; the highest prevalence found is 75% positivity in pig populations while in Huancaayo 51% [11,12].

The presence of *Cysticercus cellulosae* in pigs with owners carrying *Taenia solium* is clear, as long as the animal develops in an area no greater than 500 m away from the owners' home; This situation is further aggravated when pigs are raised extensively and the absence of sanitary latrines, since pigs have access to human feces, which is very common in rural areas of Peru [13]. Continuing with the same point, if the pig grows at a distance of less than 50 meters, the probability of infestation increases 4.6 times; being children the most prone to also be infested [14].

Since the second half of the 20th century, the health sector initiated cysticercosis control measures in Peru without much success, with the use of media such as training, brochures, school education, and radio advertising; Almost or nothing changed the current reality, which at the moment brings with it the ignorance and the non-seizure of carcasses in slaughterhouses [15]. The development and commercialization of a vaccine saw hope in the control of cysticercosis, but this only managed to control the infestation for brief periods [16]. On the other hand, the massive migrations of people coming from rural areas of the Sierra and Selva, you consider as places of high endemicity; those of low endemicity; It is a phenomenon that is impossible to control and which makes the eradication of this disease impossible [17].

Even in these times it is necessary to deal with the idiosyncrasy of the people, especially in rural areas of the Sierra; which, due to ignorance or fear of confiscation of their animals, opt for slaughter in clandestine slaughterhouses without the supervision of an animal health professional and many times the carcasses are sold in markets in large cities at reasonable prices. Likewise, many cities do not have municipal slaughterhouses and if they do, they do not have suitable personnel to inspect the slaughtered animals.

Role of the Veterinary Doctor and the Changes Made in Recent Times

Briefly considering all the aforementioned limitations, the Veterinarian intervenes in the control and prevention of porcine cysticercosis through the confiscation of infested carcasses; which is notified to SENASA (National Agrarian Health Service) and thus managing to comply with the Agrarian Health Law of this country [18]. It also works through health education, epidemiological controls and pharmacological treatments for animals. All these works allow cutting the evolutionary cycle in a certain way in order to reduce in some way the high prevalences.

In very few countries, veterinarians are not included among health professionals; this has been the case in Peru for a long time. But at the end of March of this year, according

to the "Work Law of the Veterinarian Health Professional" [18]. It allows to adhere to this profession within the health professionals and to be able to develop together with the human doctors in the prevention, control, diagnosis and epidemiological surveillance; that before it was only functions of the human doctor specialized in epidemiology and Public Health.

Conclusion

Cysticercosis is a serious public health problem in Peru causing economic and social losses in populations of pigs and people infested with this parasite. The insertion of the veterinarian as a health professional is a starting point to achieve an effective control and eradication of zoonotic diseases, many of them forgotten and others left aside due to ignorance, bureaucracy or politics that prevail throughout the country. It is appropriate to carry out specific studies that provide reliable data in order to look at the looming panorama and be able to take joint actions with all health professionals.

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