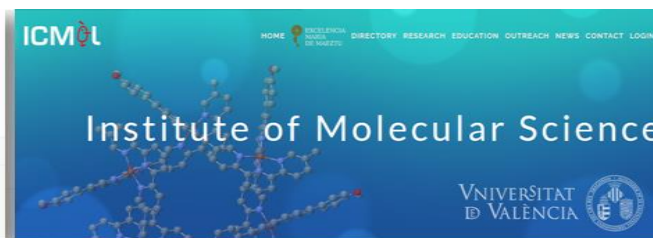




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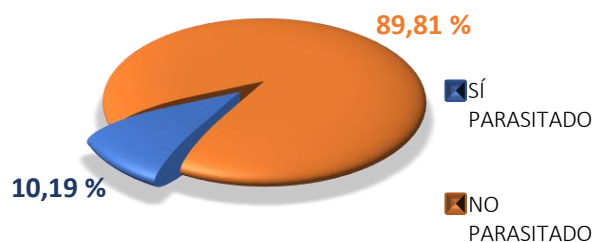
St. Agustín

Ascariasis prevalence in pig farming at a Valencian slaughterhouse

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Graphical Abstract



Abstract

Ascariasis is a worldwide disease that has a great impact on the pig-farming sector as well as in the public health system, since it affects humans. This is the reason why this disease must be controlled in slaughterhouses. The aim of the study was to determine the prevalence of ascariasis in pigs in a slaughterhouse in Valencia in 2018, which was 10.19 %. For this purpose, 464,659 animals from 525 farms from different autonomous communities were studied. In addition, we wanted to determine the influence of factors such as the origin of the farm and the month in which the animals are slaughtered in the onset of the disease.

Introduction

The pig meat sector in Spain has an important role in the national economy, reaching limits of 12.7% of final agricultural production and 36.4% of final livestock production. This is equivalent to 30.13 million pigs in 2017. Growth has been considerable, with Spain being the first country in the European Union with 19% of the community census. About the worldwide production of pig, Spain ranks fourth with 49.6 million animals slaughtered and 4.25 million tons produced. Within the European Union, it holds second place in community production with 18.2%. The census of pigs in Spain grew during 2018 to 30.8 million heads occupying the third place worldwide. Pig sector is currently undergoing a restructuring; there is an increase in the number of large farms and a decrease in the number of smaller ones.

Ascaris suum, the etiologic agent that causes porcine ascariasis and has a great impact on public health, is distributed throughout the world, with a higher prevalence in countries with tropical, humid and temperate climates. Being the pig the main host of this parasite 60 days after infection, the female can release eggs, so the biological cycle starts again. Liver migrations cause chronic multifocal interstitial hepatitis ("milk spot liver"). In the lungs, petechial haemorrhages and cell residues can be observed. On the mucosa of the small intestine, they produce slight hyperemia, enteritis and erosions. Liver lesions and adult worms in the intestine are the lesions that are mainly found in the slaughterhouse.

Materials and Methods

The study was carried out in a Valencian slaughterhouse. The information obtained was for the year 2018 where 464,659 pigs from 525 farms were slaughtered.

During the postmortem inspection of the viscera, those livers showing milk spots or pigs with any alterations due to ascariasis, in addition to the farm from which they come, are recorded. The data obtained were sent to an Excel where the prevalence was obtained. Different tables and graphs were made to provide necessary monthly information for each farm, obtain exact prevalence, discriminate farms by prevalence values or incoming animals.

Results and Discussion

Regarding the annual prevalence, of the 464,659 pigs that were slaughtered in 2018, 47,376 cases of ascariasis were detected, representing a prevalence of 10.19%. This data differs greatly from the prevalence obtained in slaughterhouses in northern Spain, where it was less than 5%.

According to the data obtained from the monthly parts, we can show the high prevalence in the months of August and September, compared to the month of April where there were almost no animals diagnosed with *Ascaris suum*. This is due to the relative temperature and humidity. With temperatures between 5 and 24°C, they are no longer infective in 3 months and with temperatures below 15°C, they can survive, but they don't develop.

The temperatures of early summer can cause the embryonic development of eggs accumulated in the winter period. In summer, there are fewer eggs in the depositions compared to winter and autumn. In addition, the conditions of mud influence, since it conserves the humidity thus increasing the survival of the same ones. For this reason, the extensive production of pigs shows a higher prevalence in autumn and spring months.

In relation to the prevalence by farm, of the 525 studied, the most notable group was the one that obtained a prevalence between 0 and 10% where 432 were found; of which 362 obtained a result of 0% prevalence. Next, it is worth mentioning the appearance of 10 farms with a prevalence greater than 90%; of which half obtain a value of 100%.

Leading the list of prevalence by province is Burgos with 17.21%, Valencia with a total prevalence of more than 15%, followed by Cuenca with 14.21%. The provinces with the lowest prevalence were Albacete and Alicante, not exceeding the 1% prevalence in their farms.

Conclusions (*optional*)

Following the preparation of this study, it was established that ascariasis prevalence in pig farming at the Valencian slaughterhouse is approximately 10.2%. It is specified that the onset of the disease is adjusted with periods of high relative humidity, coinciding with the months of August and September and a lesser influence in April where we find the lowest value.

Similarly, it can be said that provinces with high values of relative humidity combined with high temperatures such as Burgos and Valencia, have the ideal characteristics for the increase of the disease.

It should be noted that the occurrence of the disease is more common in extensive swine than in intensive, being an important factor the control of hygienic conditions and their correct disinfection.

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