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Research Article

Analysis of the Prevalence of Canine Toxocariasis in Matilde Esther, Ecuador, and its Connotation in Human Health

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Abstract

Toxocariasis is an invasive, zoonotic and cosmopolitan disease, produced by the biological etiological agents Toxocara canis and Toxocara cati. The objective of this research is to give the value that this topic deserves for human health, by investigating its prevalence in Matilde Esther, Ecuador; It was carried out during the months of September-December 2021; 110 canines were investigated, evaluating the variables, ages, sexes, races, origin, type of feeding, related to the disease, randomly, without discrimination, considering the study, observational, epizootiological, non-probabilistic, applying a non-experimental, descriptive, prospective design, cross; The data were weighted through contingency tables, using the Chi square statistic, plus the SPSS statistical program, where the prevalence of parasites was demonstrated, facilitating their multiplication and development, increasing the risk of damage in humans, in a revealing and alarming.

Keywords: Canines; Cosmopolitan; Infestation; Nematodes; Syndrome; Zoonoses

Abbreviations

RPM: Revolutions Per Minute; HOF: Helminth Ovoscopic Flotation Technique; ML: Milliliters; SPSS: Statistical Program

Introduction

Toxocariasis is an invasive, zoonotic and cosmopolitan disease, produced by the biological etiological agents *Toxocara canis* and *Toxocara cati.*

Among the pets that live with man, the dog occupies the first place and is considered the best friend, especially of children, and without hesitation this harmony is affected by the presence of parasitic diseases that cause acute or chronic clinical pictures that affect health, vitality and physical appearance and that can cause death [5].

Since the human being is not the definitive host of the nematode, its larvae do not mature in the body, allowing them to migrate erratically throughout the body through the blood to different systems and organs, given their prolificacy and the great resistance of their eggs. to environmental conditions [16]; Depending on the organs that are invaded, the time of migration, the intensity of the invasion, the age of the patient and the immune response presented by the host, inflammatory reactions known as visceral larval migration syndrome are produced, with symptoms of fever, leukocytosis, hepatosplenomegaly, bronchitis, adenopathies, joint pain, encephalitis or meningitis, intracranial tumor, among other manifestations.

A change in inadequate hygienic and sanitary habits is required. Participatory methodologies aimed at health education promoted

by the WHO [10], based on raising the essential attributes and capabilities of people to stimulate behavior change, their strength and inventiveness, action planning.

Over the years, these diseases have caused more deaths and economic damage to human beings than all armed conflicts combined, in turn, it is considered the most important parasitic zoonosis today, so we have set ourselves the goal through this research to analyze its prevalence in Matilde Esther, Ecuador.

Materials and Methods

The research was carried out in the months of September to December 2021, in Matilde Esther, Ecuador. 110 canines were studied, collecting the results of the variables age, sex, race, origin and food received, randomly, without discrimination; Then, the inductive method was applied for the macroscopic observation of feces, the presence of non-embryonated eggs, microscopic observation, weighting, concentration, sedimentation and flotation, using the Helminth ovoscopic flotation (HOF) technique. Data were weighted using contingency tables, using the Chi square statistician, plus the statistical program SPSS.

Materials used for the HOF technique

Canine stool samples, plastic cups and spoons, fine mesh strainers, coverslips and slides, centrifuge, test tubes, racks, supersaturated saline solution, microscope, gloves, rectal cannula, box of plastic to obtain the sample, field sheet (registration), pen, pipette, covers, alcohol, flannel, detergent.

Procedure used to perform the technique in canines

Five to ten grams of feces were taken from different parts of the sample. Saline solution is added to obtain a volume of 100 mL, the fecal suspension is sieved using a fine mesh strainer. Three-fourths of the test tube is filled. It is placed in the centrifuge for three minutes at 2000 rpm. After centrifugation, two or three drops of the supernatant are obtained with a pipette and placed on the slide. Observed under a microscope with a 10x objective.

Experimental procedure

We consider that this research is non-probabilistic epizootiological observational, with a universe of 110 randomly selected canines, through a non-experimental, descriptive, prospective, cross-sectional design.

This formula was applied

Prevalence: Number of cases with the disease at a given time/ Total population at that time x 100

Prevalence: 58/110 x 100 = 52.72%.

Results and Discussion

The universe of the sample was 110 canines; Table 1 shows the significant percentage of positive cases for Toxocariasis of 52.72%, revealing its prevalence, information obtained with the technique, HOF; Similar studies carried out and positive cases have shown, but to a lesser extent, 47.28% (Ancylostomas 24.9%, Ascaris 8.1%, American Necátor 6.5%, *Trichuris vulpis* 4.1%, and *Dipylidium caninum* 3.68%). According to the World Health Organization [18], Toxocariasis is widely distributed worldwide, being endemic in most of the countries of America, Africa and Asia. The prevalence of this infection is difficult to establish due to the difficulty of an accurate diagnosis and the fact that this disease is not notifiable. Man is an accidental host, with children being the most affected due to their playing habits in parks and backyards contaminated with parasite eggs [6].

Parasites	Prevalence
Toxocara canis	52.72%
Others	47.28%

Table 1: Prevalence of *Toxocara canis* in the analyzed population (n=110). **

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Table 2 indicates the result by sex, with 62.72% preponderating the infested females, with the biological etiological agent investigated. These authors [1] concluded that male and female canines of any sex, from 20 days to a year and females older than 1 year in heat, pregnancy or lactation, act as disseminators of Toxocariasis.

Sex	Patients	Percentage
Females	69	62.72
Males	41	37.28
Total	110	100.00

Table 2: Prevalence of *Toxocara canis* in dog feces, according to their sex. **

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Table 3 denotes the score by age, where patients 45 days to 1 year old predominate, infested with the biological etiological agent under study with 53.64%, followed by the age group of 1 to 3 years old that reached 28.18%, coinciding with [14], stating that *Toxocara canis* is an intestinal cosmopolitan nematode that seriously affects puppies and frequently adult canids.

Ages	Canine	Percentage
45 days to 1 year	59	53.64
1 to 3 years	31	28.18
3 to 5 years	14	12.74
5 to 7 years	5	4.54
7 to 9 years	1	0.90
More than 9 years	0	0
Total	110	100.00

Table 3: Prevalence of Toxocara canis in dog feces, according to their ages. **

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Table 4 presents the score by breed, where mestizo canines infested with the biological etiological agent under investigation prevail with 48.20%, followed by the Pitbull and Poodle breeds with 25.45% and 10.0% respectively, Rottweiler with 8.18%, Boxer with 4.54% and Cocker Spaniel with 3.63%; similar results were obtained at the conclusion, that the highest incidence rate of *Toxocara canis* in canine feces was found in the mestizo breed with 27.7%, followed by the Pitbull breed with 4.5%, then the French Poodle breed with 1.4%, Rottweiler with 1.4%, and the Cocker, German Shepherd, Sausage, Dogo with 0.28% of positive cases. [17].

Breeds	Patient	Percentage
Mongrels	53	48.20
Pitbull	28	25.45
Poodle	11	10.00
Rottweiler	9	8.18
Boxer	5	4.54
Cocker Spaniel	4	3.63
Total	110	100.00

Table 4: Prevalence of *Toxocara canis* in dog feces, according to breed. **

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Table 5 expresses the scores according to their origins, where gift canines predominate, infested with the biological etiological agent under investigation, with 53.63%, followed by those collected from the street with 28.20%; reached a similar result, when he found the highest percentage of incidence of *Toxocara canis* in canine feces was in patients collected from the street, with 27.5% [14].

Origins	Patient	Percentage
Given away	59	53.63
Picked up from the street	31	28.20
Purchased	12	10.90
Born at home	8	7.27
Total	110	100.00

Table 5: Prevalence of *Toxocara canis* in canine feces, according to its origins. **

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Table 6 reveals the scores according to the type of food they receive, where dogs that consume pellets and homemade food predominate with 50.93%.

Feeding	Patient	Percentage
Pellets and homemade food	56	50.93
Pellets	34	30.90
Homemade food	14	12.72
Homemade food leftovers	6	5.45
Total	110	100.00

Table 6: Prevalence of *Toxocara canis* in dog feces, according to the type of food they receive. **

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Conclusions

- The existence of *Toxocara canis* is ratified in 58 of the 110 canines analyzed by the Helmito ovoscopic flotation technique, evidencing its prevalence.
- 62.72% of positive cases are female.
- 48.20% of the positive cases to the biological etiological agent under investigation are mestizo canines.
- There was no statistical significance between the variables studied, with the existence of a biological etiological agent, so

according to this research, all canines have the same probability of suffering and transmitting the disease.

- The poor health conditions in areas of the studied area are predisposing factors for the existence, multiplication and development of the biological etiological agent.
- There is no culture about the dangers of this disease in the human population in the investigated area.

Recommendations

Provide adequate health education to the population, deworming and timely veterinary control of pets and promote the correct washing of hands and food, in all people.

Conflict of Interest

There were no conflicts in the development of the study.

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