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Serological Study of Prevalence Toxoplasmosis in Different Animals in Basra Province

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Abstract
The study is designed to identify *Toxoplasma gondii* at animals of Basra province / Iraq a total of 73 blood samples were randomly obtained from four species of animals include (sheep n=42, goats n=19, cows n=6, and cats n=6) at Basra province were tested using a serological test (Onsite Toxo IGG / IGM rapid Test – Cassette, USA, catalog number Ro 234C-2Rev. E3.0) to the identification of anti-Toxoplasmosis antibodies in animals during beginning of October 2022 until the end of April 2023. The highest rate observed in cats, sheep and goats (33%) of cats, (21%) of sheep and goats.

Keywords: Toxoplasma gondii, Onsite toxo, Antibodies

الملخص
صممت هذه الدراسة لتشخيص طفيلي التوكسوبلازما في أربعة أنواع من الحيوانات في محافظة البصرة / العراق. حيث تم فحص 73 عينة دم عشوائية (42) الأغنام، (19) الماعز، (6) أبقار، (6) قطط بأستخدام الاختبار المصلي (Onsite Toxo) IGG / IGM rapid Test – Cassette, USA, catalog number Ro 234C-2Rev. E3.0) لتحديد الأجسام المضادة لمرض المقوسات الكوندية خلال الفترة الممتدة من بداية تشرين الثاني 2022 وحتى نهاية نيسان 2023 أظهرت نتائج الدراسة ان نسبة الإصابة في القطط بلغت 33% بينما بلغت نسبة الإصابة في الأغنام الماعز 21%.

الكلمات المفتاحية: توكسوبلازما، اختبار مصلي، الاجسام المضادة

Introduction

Toxoplasma gondii is obligate intercellular protozoan, may infect nearly all animals with warm blood including humans and domestic animals.[1] The infection enters the body *Toxoplasma* infection occurs when animals consume grain, grass, or hay that has been contaminated by infected cat feces rough the small intestine and travels to the lymph nodes before spreading throughout the animal's system via the bloodstream. *Toxoplasma gondii* can exist for years in the muscles, liver, brain, and other important organs of goats. *T. gondii* may also be harmful to cattle, where it may cause significant financial losses in some areas and in some farming techniques.

Serological data indicates that (6-47%) of the chronically infected with the organism, Anti-*T. gondii* IgM develops during acute primary infection with *T. gondii* and declines generally within a few months, *T. gondii* IgG develops ge nerally within (1-2) weeks post infection, peaks within (1-2) months and usually persists the detection of immunocompromised patients who are in danger for the rest of their lives is made possible by the presence of IgG. For the reactivation of a latent infection. There is little information accessible in Iraq's Basra province about toxoplasmosis in food-borne animals. As a result, the current research was designed to investigate into the prevalence of *T.gondii* in animals, including cats, sheep, goats, and cows.

Material and method

Collections of serum sample

This study carried out in parasitology laboratory - Technical Institute in Basra province, (73) blood sample each of (3) ml were collected from (sheep n = 42, goats n = 19, cows n = 6, and cats n = 6) into a sterile screw capped tube, each sample identified and tube left in a sloping position at room temperature than centrifuged at 5000 rpm for 10 minute, serum were aspirated by pasture pipette.

Serological testing

according to manufacturer procedure commercial Onsite Toxo IgG/ IgM Rapid Test (USA, catalog number Ro 234C -2Rev. E3.0) detects anti *T. gondii* IgG and IgM in animals serum by utilizing *T.gondii* specific antigens,the The test can be completed in 10 minutes by minimally skilled persons without the use of laboratory equipment.

Statistical analysis

Chi-square test was applied to verifying the correlation between the species of animals natural data acquired were utilized to examine the questionnaire data and determine whether the relationship existed, The differences were considered statistically significant when the P value ≤ 0.05.

There have been numerous studies on the incidence of Toxoplasma gondii were done in many parts of world and they have shown difference in prevalence of toxoplasmosis depending on localities, traditions , hygienic habits, and sanitary environment of people who were living there (Gleason et al.,1970) , (Lv and Cui, 1994). The present study indicated that there were 15 animals infected with Toxoplasmosis by using Onsite T oxo IgG / IgM Rapid Test (Figure 1), and the overall prevalence was noted (21%) in Basra province, The results revealed equal prevalence of toxoplasmosis among sheep and goats (21%) in the region of this study.

Result and discussion

The results of the current study disagree with (Saad and Al_Husseiny, 2010) who has reported (60%) prevalence in Basra province in 309 sheep randomly selected from Al-Mdayna, Shatt Al-Arab, Al-Basra,

Al-Zubayer and Abu Al-Khasib regions, the rate of our research was lower than rate 72.2% which recorded by (Alshahery and Mansour, 2012) in Mosul, and rate of our result was lower than rate % which recorded by (Lahmar et al., 2015), the variance between prevalence of toxoplasmosis from one study may consequent to the different factors such as the number and the method used for the diagnosis or because the prevalence of parasites varies from year to year and from one area to another within the same country.

Toxoplasmosis is diagnosed by detecting two types of antibodies (IgM and IgG) which each of them has different interpretation, a positive IgM antibody test indicates that parasite may be present, when IgM is detected animals may have recurrently be infected while found IgG indicates to past infection (kaul *et al.,*2004) the results of the current study revealed that *T.gondii* IgG is detected in all infected samples(Figure2). **Figure (2**) show detected IgG( ) in all infected sample.Observe in the rates of infection between four species of animals, the highest rate of toxoplasmosis was notice d in cats 33% followed by sheep and goats with rate 21% whereas the lowest rate of infection was noticed in cows 0%, that result agree with (Al-Ramahi *et al*., 2010) in Mid-Euphrates who recorded rates 58% in rural habitant cats, 47.4% in goats, 38.98% in uraban habitant cats and 36.24% in sheep. Our finding confirm previous studies stating that infection with toxoplasmosis was higher in sheep follo wed by cattle, difference in prevalence of toxoplasmosis between species of animals might be due to difference in susceptibility to *Toxoplasma gondii* infection (Fayer,19 81).

Conclusion

A investigation ought to identify the primary source of infection in the nation. The data collected confirmed that the disease was detected in Basra Province, even if the current rates of infection had not been high, Our research suggested using molecular approaches (PCR) to diagnose toxoplasmosis in different animals including mammals and birds, the teaching campaign needs to be improved, and it should look into socioeconomic effects of the disease on Basra's residents.

References

1. Al-saad, KM.; Al-Husseiny, S.(2010). An investigation of sheep toxoplasmosis in Basra Province / Iraq. Medicine Sciences, 9(3):128-137.
2. Alshahery, M. N. and Mansour, R.S.(2012). Detection of *Toxoplasma gondii* antibodies in horses in Mosul, Iraq. Iraqi journal of Veterinary Sciences, Vol.(11)26 , PP:39-41.
3. Boughattas, S.; Bergaoui, R.; Essid, R.; Aoun, K. and Bouratbine, A. (2011). Seroprevalence of *Toxoplasma gondii* infection among horses in Tunisia. Parasite Vectors 4:218.
4. Fayer, R. (1981). Toxoplasmosis update and public health implications. Can. Vet. J. 22:344-352.
1. Gleason, N.N.; Horwitz, M.s.; Newton, L.H. and Moore, G.T.(1970). A stool
2. survey for enteric organisms in aspen, colarado. Am.J.Trop. Hyg.,19:480-484.
3. Kaul, R,; Chen, P. and Binder, SR. (2004). Detection of immunoglobulin M antibodies specific for *Toxoplasma gondii* with increased
4. selectivity for recently acquired infections. J. Clin. Microbiol., 42:5705–5709.
5. Lahmar, I.; Lachkhem, A.; Slama, D.; Sakly, W.; Haouas, N.; Gorcii, M.; Pfaff, A.; Candofi, E.and Babba, H.(2015). Prevalence if toxoplasmosis in sheep, goats and cattle in
6. southern Tunisia. Journal of Bacteriology and Parasitology, ISSN:2155-9597.
7. Lv, yc. and Cui, jz. (1994). Survey of *Toxoplasma go ndii* infection in pigs and cattle in Guangxi Province, p.1607
8. China. Journal of animal Sciences and Veterinary Medicine,3:26.

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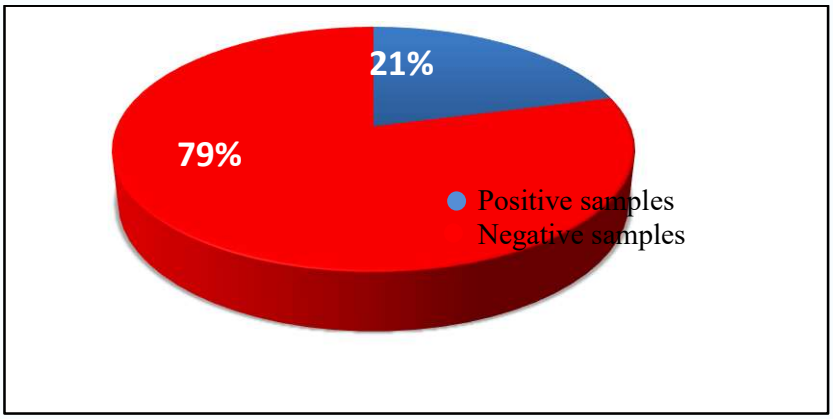

Figure (1): total prevalence of *Toxoplasma gondii* in animals.

Figure (2): show detected IgG(⟶) in all infected sample.

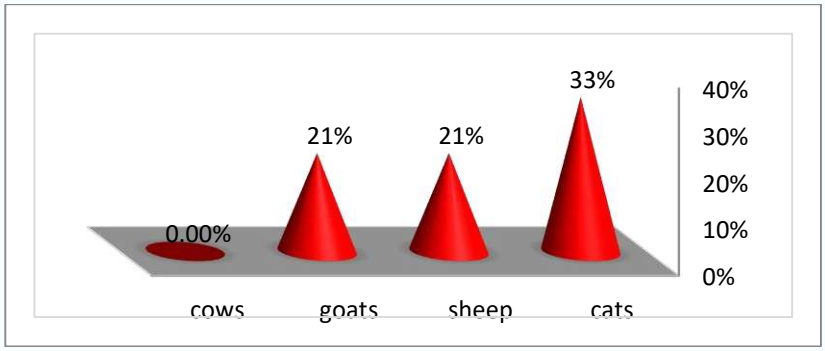

Figure (3): prevalence rate of toxoplasmosis among species of animals.