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Distribution of *Toxoplasma gondii* in the Pregnant Women of District Swabi Khyber Pakhtunkhwa Pakistan

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Abstract: The aim of this study is to find out the occurrence of *Toxoplasma gondii* in pregnant women of district Swabi, Khyber Pakhtunkhwa, Pakistan. The present research was conducted during the period July to October 2013. The latex reagent method was used. A total of 805 samples were collected, out of which the 155 (19.25%) were positive and 650 (80.75%) were negative for the *T. gondii.* The age wise distribution shows that the high number of cases 92 was reported in age group 25-34 years where the lowest number of cases 17 was reported in age group >34 years. The area wise occurrence showed that the high number of cases 13 (26%) is recorded from Sodher and Yaqoobi while, the low cases was reported in Gohati and Dagi 5 (10%). From this study it was concluded that the high prevalence was reported in the younger age.

Key words: Toxoplasma Gondii · Pregnant Women · Latex Reagent Method

INTRODUCTION

Toxoplasma gondii is an obligate intracellular protozoan which is belongs to the phylum Apicomplexa and subclass coccidia. *T. gondii* and is present in three different forms such as oocyst, tachyzoite and cyst. The genome of *Toxoplasma gondii* is haploid and encloses about 8107 bp [1]. On the basics of virulence and epidemiological distribution, *T. gondii* is divided into three different type I, II and III [2, 3].

Globally the infections caused by *T. gondii* are commonly widespread in animals and humans. In animals the Cats are very important for their natural life cycle of *T. gondii* because the cats are the single host that can openly spread *Toxoplasma gondii* in the surroundings. Cats are able to salvage and intensify the infection via releasing millions of infective oocysts in the environment. *T. gondii* infection in humans particularly in female and children's that depending on environment, cultural behavior and animal fauna [4, 5].

Human beings is infected by *T. gondii* in the handling or ingestion of undercooked or raw meat that containing cysts and they are also caused the infection by taking food or water that containing the oocysts. The majority persons are infected accidentally; therefore the definite route of transmission cannot frequently exist. Differences in Seroprevalence of *Toxoplasma gondii* appear to associate with eating and hygiene habits of inhabitants. The oral route is the major source of infection [6, 7].

MATERIALS AND METHODS

The aim of this research is to find out the rate of occurrence in pregnant women of district Swabi, Khyber Pakhtunkhwa, Pakistan.

Samples Collection: A total of 805 blood samples of pregnant women were randomly collected in sterilized vacationer from different maternity hospital, of district Swabi, Khyber Pakhtunkhwa, Pakistan during July to October 2013. The bio-data of all the pregnant women are taken in a proper questionnaire format that specified the age and area. The research work was carried out in the Shehzad clinical laboratory, Kunda Morh, Swabi.

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Serum Isolation: The blood samples were centrifuged at 80-100 rpm for 8-11 minutes. After the complete centrifugation the Serum was separated an eppendorf tube through micro pipit and stored in a freezer at - 20°C for serological analysis.

Serological Methods: All samples were screened for specific IgM antibody against *Toxoplasma gondii* using latex reagent method. For this the (Spinrect Spain) Toxo-latex test were used for the qualitative and semi-qualitative detection of *T. gondii* antibodies. Latex particles coated with soluble *T. gondii* antigen are agglutinated when the antibodies present in serum samples.

Test Procedure: Allow the reagent and samples to reach room temperature. The sensitivity of the test may be reduced at low temperature. Place 50µl of the sample and 1 drop of each Positive and Negative control into separate circles on the slide test. Swirl the Toxo-latex reagent gently before using and add 25µl of this reagent next to the samples to be tested. Mix the drops with the stirrer, spreading them over the entire surface of the circle. Use different stirrers for each sample. Place the slide on a mechanical rotator at 80 – 100 rpm for 4 minutes. False positive results could appear if the test is read later than four minutes.

Test Result Examination: The microscopic examination shows the presence or absence of visible agglutination immediately after removing the slide from the rotator. The presence of agglutination indicated an antibody concentration equal or greater than 4 IU/mL.

RESULTS AND DISCUSSIONS

Out of total 805 samples 155 (19.25%) were found positive and 650 (80.75%) were found negative for Toxoplasmosis as shown in Figure 1. Our study shows similarity with the results of the others. The Pal *et al.* [8] reported 17% seroprevalence of *T. gondii* from Islamabad and Rawalpindi. According to Khan *et al.* [9] 14.44% cases were recorded from Kohat.

Age Wise Distribution of *T. gondii*: For the age wise distribution of *T.gondii* the local population was divided in to three age groups include 15-24 years, 25-34 years and >34 years. The results indicate that the high number of cases 22.28% (n=92) was occurred in age group 2: years followed by 17.1% (n=46) in age group 1: 15-24 years and 13.83% (n=17) in age group 3: >35 years as shown in Figure 2. The rate of infection is high in age group 25-34 years were due to more interaction with house hold animals and agricultures field.

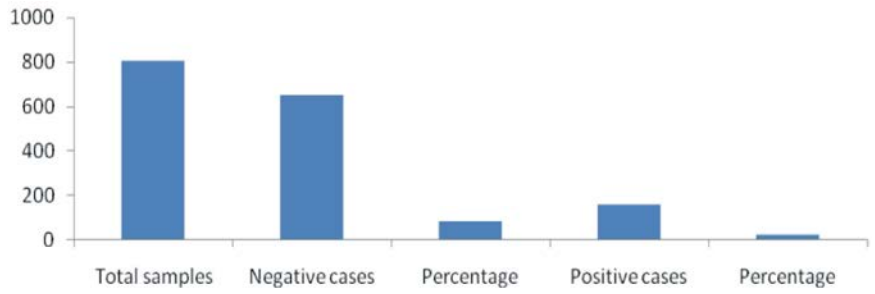

Fig. 1: General distribution of Toxoplasma gondii in district Swabi

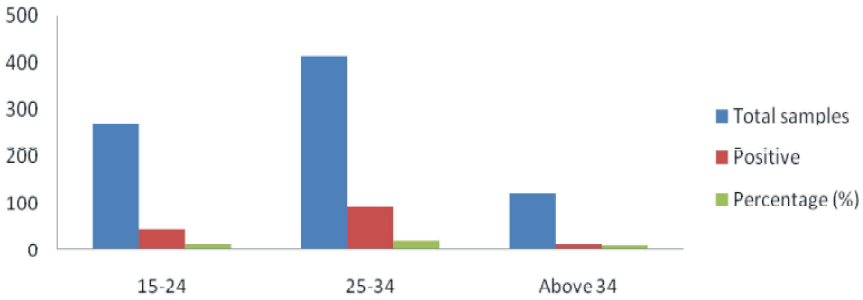

Fig. 2: Age wise distribution of Toxoplasma gondii

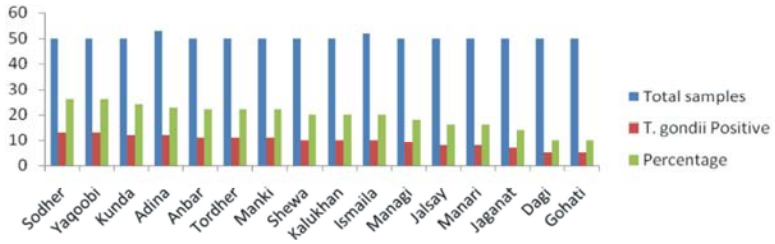

Fig. 3: Distribution of Toxoplasma gondii in different villages of district Swabi

Village Wise Distribution of *T. gondii*: In the present study the blood samples was collected from the sixteen villages of district Swabi. The high number of positive cases 13/50 (26%) was reported from Sodher village and Yaqoobi village followed by 12/50 (24%) from Kunda village, 12/53 (22.4%) from Adina village, 11/50 (22%) from Anbar village, Tordher village and Manki village, 10/50 (20%) from Shewa village and Kalukhan village, 10/52 (19.92%) from Ismaila village, 9/50 (18%) from Managi village, 8/50 (16%) from Jalsay village and Manari village, 7/50 (14%) from Jaganat village and 5/50 (10%) from Dagi village and Gohati village as shown in Figure 3. Some area of the said area shows high rate of prevalence as compared to others. The possible reason for the high rate are, no or low health facility, no proper treatment, low knowledge about the disease, awareness etc.

CONCLUSIONS

It was concluded that the high rate of *T.gondii* was reported in age group 25-34 yearsand high number of cases was reported in Sodher village and Yaqoobi village.Awareness programs, proper health facility and away animals and cats from the houses should be needed for the control of the disease.

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