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Serologic Evaluation of Toxoplasmosis in Matrimonial Women in Babol, Iran

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Abstract: To investigate anti-toxoplasmosis in matrimonial women, samples collected from who referred to Babol health center, that is the only pre-marriage laboratory guide center in Babol. This descriptive-cross sectional study has carried out on 241 matrimonial women to consider anti toxoplasmosis antibodies (IgG, IgM) by ELISA (Enzyme Linked Immunosorbant Assay). In this study, 241 women between 13 to 40 years old were considered. The average age was 20.98 years. Of these cases, 47.3% were urban and 52.7% were rural. 63.9% had IgG and 12.4% had IgM anti-toxoplasmosis antibody. This study carried out to determine anti toxoplasmosis antibodies in Babol in the first half of 2004. Dispersed studies have been done to determine the prevalence of toxoplasmosis in Iran and mostly have reported a high and different prevalence of toxoplasmosis in different parts of country.

Key words: Toxoplasmosis, ELISA, IgM, IgG

INTRODUCTION

Toxoplasmosis is one of the most important zoonosis diseases that is transferred by raw or half-cooked meat. Congenital transferring and cat-infected stool are the other transferring ways. Its complication in pregnancy due to congenital infection must be taken into consideration (Beaver, 2000).

Nowadays, serologic assays by measuring specific anti-bodies are used to diagnosis of toxoplasmosis. In acquired toxoplasmosis, a positive IgM titer and clinical features or an increasing anti-body titer in last three weeks indicate an acute infection (Gillespie and Pearson, 2001).

If serologic assays are positive before pregnancy there will be no risk of an infected embryo, in another words the mother immunity prevents intrauterine infection (Sharif and Ajami, 2000). So the American women and midwifery center commented screening serologic assays before pregnancy in 1993. Studies that have been carried out in New York, London and Paris have reported a positive anti toxoplasmosis antibody rates of 32, 22 and 84%, respectively (Weiss and Kim, 2004).

Some of studies in different parts of Iran (Azerbaijan, Sistan and Baloochestan, Khoozestan and Tehran) also reported a positive rates of <40%, about 30%, around 45% and near 50%, respectively (Daryani, 2003; Mardani, 2003).

The prevalence of toxoplasmosis depends on to age, geographical area, diet and keeping cats in houses.

Increasing the age, raw or half-cooked meat use, keeping cat in house and living in warm, humid and low-Revenue places increases its prevalence (Sharif and Ajami, 2000).

About more than 50% of people in this country are seronegative against toxoplasmosis antigen and so, are sensitive to this infection, determining the prevalence and measuring anti toxoplasmosis antibody before pregnancy, is a useful step to detecting seropositive, IgG and IgM anti toxoplasmosis antibodies. And the correlation between these seropositivity with age, keeping cat, raw or half-cooked meat use, education and place of living. Therefore, the incidence rate and its complications will be reduced for seronegative cases an appropriate education to prevent infection during pregnancy must be given, that can be by general hygiene programs (Daryani, 2003; Mardani, 2003). Since the prevalence of previous toxoplasma infection in matrimonial women has been determined the purpose of this study was to assess the prevalence of toxoplasma infection in this group of people.

MATERIAL AND METHODS

This descriptive-cross sectional study is carried out to determine the Anti toxoplasmosis antibodies (IgG, IgM) in 241 matrimonial women from May through October 2004 in Babol, Mazandaran, IRAN by ELISA and the correlation between these seropositive cases and place of living (rural or urban), education, contact with a cat or keeping a cat in house and the manner of using meats.

Cases were women who referred to Babol marriage consulting center. We took 2-3 mL blood sample from each woman and after 5 min centrifugation with 2000 rpm; we kept samples in sterile tubes in -70°C. Then, IgM and IgG kit made by RADIM company (ITALY) and ELISA reader (made in USA.) used to evaluate the samples. The analytical procedure was performed using chi-square and ANOVA test $p < 0.05$ was considered statistically significant.

RESULTS

In this study, 241 women, with the average age of 20.98 years old (from 13 to 40 years old), who referred to Babol marriage consulting center, were evaluated of these women, 113 cases (47.3%) were urban and 128 cases (52.7%) were rural. According to serology tests for measuring IgG and IgM by ELISA, 63/9% were sero-positive IgG and 36.1% were sero-negative. Also, 12.4 and 87.4% were IgM sero-positive and sero-negative, respectively (Table 1).

There was no statistically significance between positive toxoplasmosis titer and place of living ($p > 0.56$) and also education ($p > 0.78$) (Fig. 1) but there was a significant difference between positive titers and keeping cats ($p < 0.001$), that person who kept cat were three times more sero-positive than persons with no cat contact.

Table 1: Evaluation rate of positive and negative Toxoplasmosis titer in matrimonial women with ELISA method

Antibodies	Results		Total
	Positive	Negative	
IgG	154(63.9%)	87(31.6%)	241(100%)
IgM	30(12.4%)	211(87.6%)	241(100%)

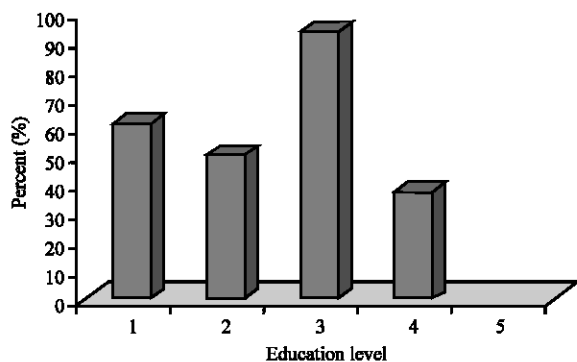


Fig. 1: Education level in matrimonial women in Babol city, Iran, 2004, 1: Educated in primary school 2: Guidance school to diploma, 3: Diploma, 4: Under graduated

DISCUSSION

The present study was carried out to determine anti toxoplasmosis antibody in 13-40 years old matrimonial women who referred to Babol consulting center for pre-marriage tests in 2004. The aim of this study was to evaluate the epidemiology of the toxoplasmosis in this region different epidemiologic researches about toxoplasmosis has mostly reported a different high prevalence rate of toxoplasmosis in different parts of country. For example a research in Iran Medical Sciences University in 1998, has reported 31.7 and 31.1% anti toxoplasmosis antibody by ELISA and IFA (Indirect Fluorescent Antibodies), respectively (Remington and Desmonts, 1973; Sedaghat *et al.*, 1978).

A research in Kerman on women who referred for pre-marriage tests, a 29.4% sero-positive antibody by ELISA, was reported.

The differences in results can mostly be due to climate condition, humidity, temperature, geographic region and food habit. In developed countries, sero-negative pregnant women will be checked from infection to toxoplasmosis every month and in case of infection, an appropriate treatment will be advised. If mother is infected at least six months before pregnancy, there will be no treaten for embryo.

In a research by the author and colleagues by IFA on this samples, 38.6 and 1.6% were IgG and IgM sero-positive antibody anti toxoplasmosis, which by using different raising titers of IgG, most of them were 1/200(37.1%) and for IgM antibody 1/10 observed. but in this study on the same samples by ELISA, 63.9 and 12.4% were IgG and IgM sero-positive antibody, respectively. This difference can be due to effective factors such as RF and ANA that can make cross-reaction with toxoplasmosis. So, to determine the true-positive cases, RF and ANA cases must be separated. After analysis the data, results obtained as below: IgM sero-positive cases were 8-times more in ELISA than IFA (without taking cross-reaction into consideration), IgG sero-positive cases were 2 times more in ELISA than IFA.

This result is completely against to the Research in Kashan in 2003, that sensitivity and specificity of IFA more than ELISA in toxoplasmosis diagnosis reported, so according to these different results, more similar researches seem to be needed (Talari, 2003).

Based on results of this study and similar studies, measuring IgM by ELISA and IgG by IFA are, respectively, appropriate diagnosis for acute and chronic toxoplasmosis.

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