

IMPORTANCE OF IgG AVIDITY TEST IN WOMEN WITH ACUTE TOXOPLASMOSIS IN THE FIRST SEMESTER OF PREGNANCY

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Abstract

The aim of this study was to test for IgG avidity toxoplasma and IgM and IgG toxoplasma in women who were suspected of acute infection with Toxoplasma gondii. 14.6% had acute toxoplasmosis, 25.4% had immunization to the disease, and at a rate of 60% the serology was completely negative.

Among women with acute toxoplasmosis, 80% were diagnosed in the first trimester of pregnancy, the remaining 20% in the second and the third trimester.

IgG avidity toxoplasma test was performed in all pregnant women with positive IgM and IgA. There has been noticed an increased avidity in 68.6% of cases, the pregnant women being diagnosed in the first trimester. In these cases there was no need for abortion, the infection being produced before conception. In 51.43% of cases, the existence of home pets in the house was recorded, thus, they represented a potential source of infection for pregnant women.

Keywords: toxoplasmosis, antibodies, immunity

INTRODUCTION

Toxoplasmosis is a zoonosis caused by a coccidian protozoan, *Toxoplasma gondii*. (Kleegman R.M. et al, 2007)) It is usually acquired orally, by eating undercooked or raw meat that contains tissue cysts or food or other material contaminated with cat feces which contains oocysts from acutely infected cats.(Drăghici S, 2005; Junie M., C.I. Sasca, 1997; Mandell G.L., J.E. Bennett, R. Dolin, 2005; Rebedea I., 2000; Remington JS, J.O. Klein, 2001)

The seroprevalence of toxoplasmosis is different throughout the world, from 23% in Zambia to 72% in Paris. (Feigin R., et al, 2004; Bujor Moraru M., C. Al. Ispas, 2011)

Up to a third of the world's population is estimated to be infected with the parasite. (Montoya J.G., O. Liesenfeld, 2004)

According to the clinical appearance, 4 categories of toxoplasmosis are taken into account: acquired in immunocompetent patients, acquired or reactivated in immunodeficient patients, ocular and congenital.

In immunocompetent patients, the infection occurs in childhood and adolescence. They are asymptomatic or presents nonspecific symptoms. Other groups presents mononucleosis-like symptoms. (Vlădăreanu R., 2000)

Positive diagnosis of acute toxoplasmosis in pregnant women is achieved through serological methods (IgM, IgG or IgA toxoplasma), and

for an accurate diagnosis, the IgG avidity toxoplasma is also determined. (Metea-Stefanescu D., et al, 2003) The latter plays an important role in determining the moment of pregnant's infection with protozoan *Toxoplasma gondii*. The continuation of the pregnancy in early stage, in which we detected IgM toxoplasma positive antibodies, its a risk for fetal malformation. (Rădulescu S., E.A. Meyer, 2000)

OBJECTIVES

Toxoplasma IgG avidity testing in pregnant women suspected to have acute infection with *Toxoplasma gondii* in order to determine more accurately the time of infection with this protozoan.

MATERIAL AND METHOD

The study included 240 pregnant women with various ages of pregnancy that were presented at the Infectious Diseases Clinic in Oradea between 01.01.2009-31.12.2012 being suspected of acute toxoplasmosis. Through CLIA (Chemiluminescence Immunoassay) method, the IgM and IgG toxoplasma values were determined and IgA toxoplasma values were determined through EIA (Enzyme Immunoassay) method monitoring their evolution dynamically in every pregnant. Those with positive serology for toxoplasma, IgG avidity toxoplasma was determined through ELFA (Enzyme-linked Immunoassay) method for more accurate knowledge of the time of infection.

In ELFA and CLIA methods, the stages for performing the test were automatic, therefore the time needed for performing the assays was shorter (Petersen E., M.V. Borobio, E. Guy, 2005, Anonymous 2006).

RESULTS AND DISCUSSION

38,7% of pregnant women from this study, were referred to the Clinic of Infectious Diseases Oradea by their own initiative, 31,7% by gynecologist, 24,6% by the family doctor and 5% by the family planning doctor.

Analyzing the serological profile of pregnant women, it was found that 14.6% had acute toxoplasmosis, 25.4 % had immunisation for the disease, and at a rate of 60 % serology was completely negative. (Table 1).

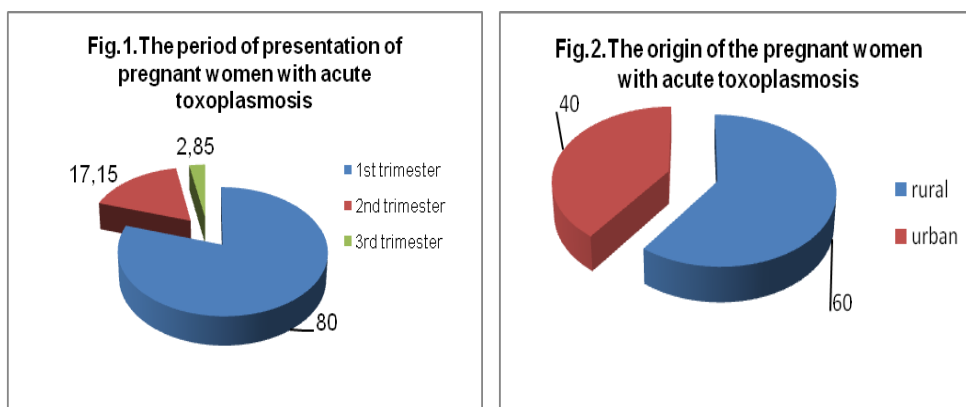
80% of the 35 pregnant women with acute toxoplasmosis were presented in the first trimester of pregnancy, 17,15% in the second and 2.85% in the third one (Figure 1).

Table 1. Serological profile of pregnant women

SEROLOGICAL PROFILE	Nr. of cases	%
Acute toxoplasmosis	35	14.6
With immunisation	61	25.4
Negative serology	144	60.0
TOTAL	240	100.0

In all cases diagnosed with acute toxoplasmosis, seroconversion of IgM to IgG was noticed.

Regarding the origin of the pregnant women with acute toxoplasmosis, significant differences were found. The percentage of the pregnant women from rural area was higher than the urban one (60% /40 %) (Figure 2).

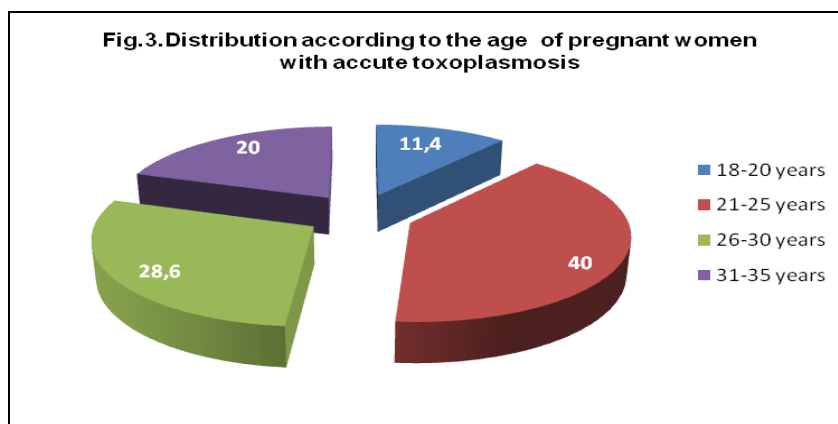


Distribution of acute toxoplasmosis cases during the months was the following. (Table 2)

Table nr. 2 Distribution of acute toxoplasmosis cases during the month

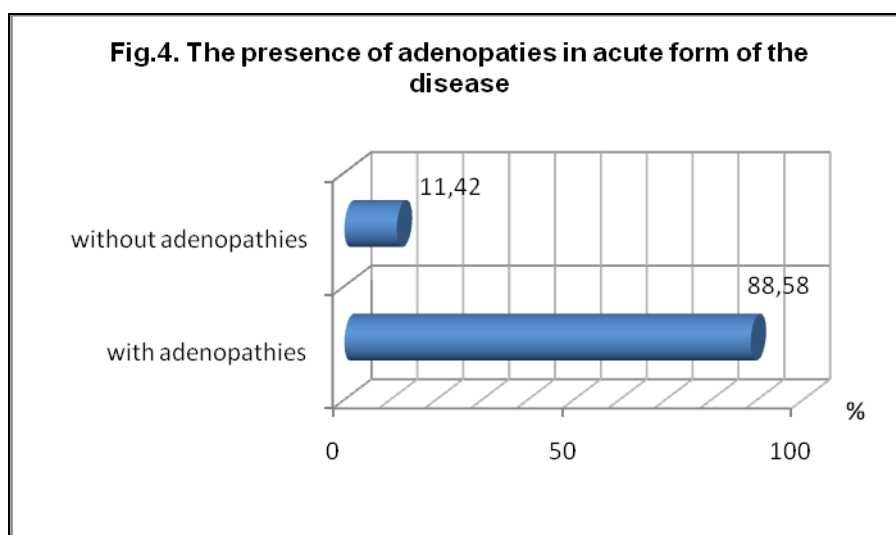
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
0	2	2	5	5	4	2	7	3	5	0	0	35
0	5,7	5,7	14,3	14,3	11,4	5,7	20,0	8,6	14,3	0	0	100

Distribution according to the age of pregnant women diagnosed with acute toxoplasmosis show as the predominant age the group 21-25 years (40%) and 26-30 years (28.6%). (Figure 3)

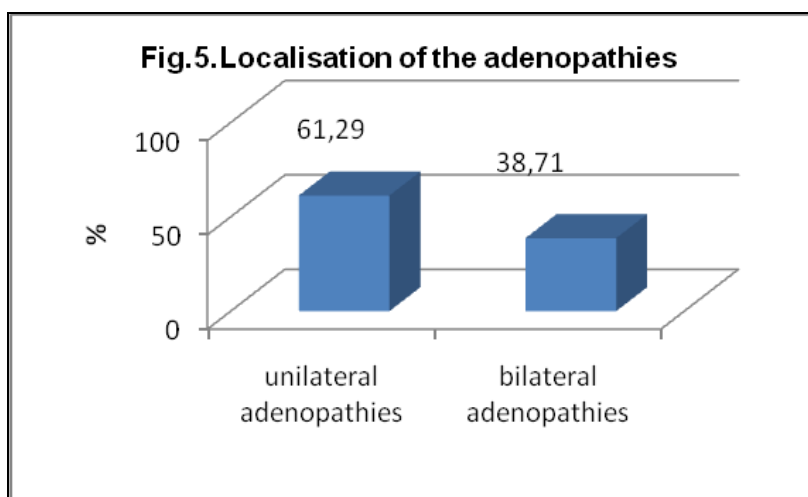


Toxoplasma IgG avidity test was performed on all women with positive IgM Toxoplasma antibody. In 68,6% of cases it revealed a high avidity, pregnant women being diagnosed in the first trimester. In these cases the infection occurred before achieving conception, thus, there was no need for abortion. In four cases represent 11,4%, we found low avidity IgG and positive IgA, thus in one case the pregnant women decided for abortion to prevent congenital toxoplasmosis in newborn, in the other three cases the pregnancy stopped with spontaneous abortion. In 20% of cases the diagnosis was established during the second and the third trimester of pregnancy, the avidity in these pregnant women being low. These people could not specify the time of infection, the pregnancy stopped with spontaneous abortion.

The relevant reasons of the acutely infected pregnant women with Toxoplasma gondii, to go to a doctor were adenopathies in 31 cases (88,58%) (Figure nr. 4).



61,29% from the pregnant women with acute toxoplasmosis presented unilateral adenopathies (Figure 5).



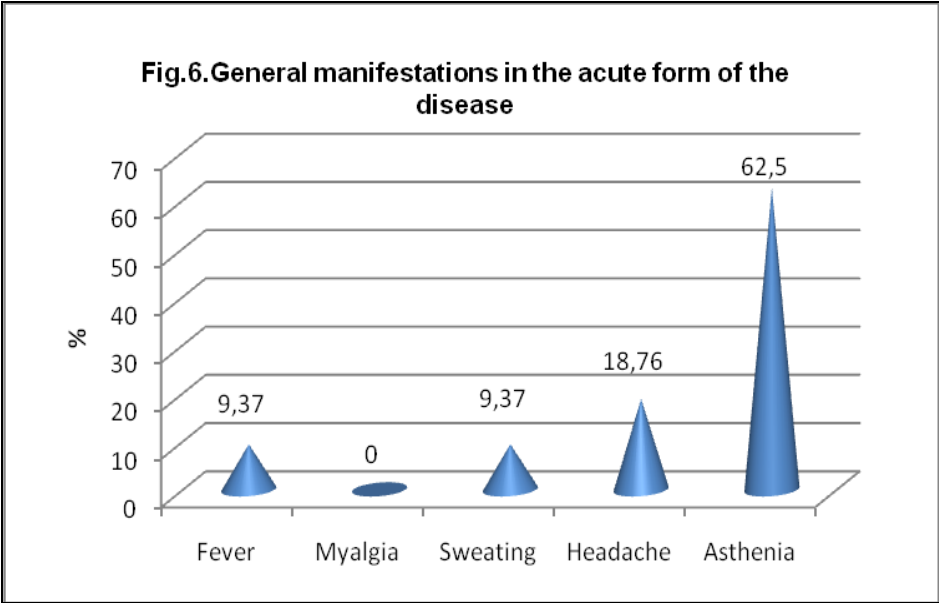
Most of the pregnant women with acute toxoplasmosis (91,43%), presented general manifestations like: fever, myalgia, sweating, headache and asthenia.

Table nr. 3 The presence of general manifestations

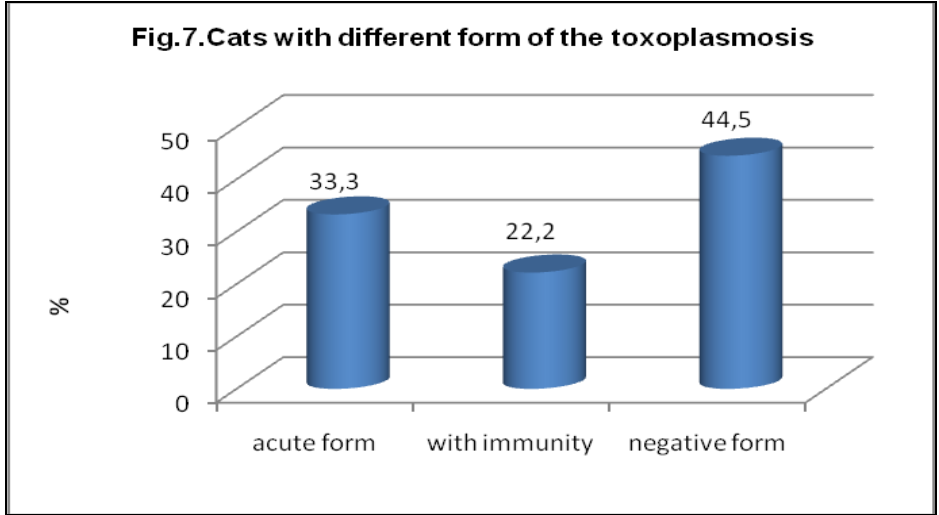
General manifestations	Nr. of cases	%
With	32	91,43%
Without	3	8,57%
Total	35	100%

Table nr. 4 The type of the general manifestations

Type of manifestation	Nr. of cases
Fever	3
Myalgia	0
Sweating	3
Headache	6
Asthenia	20
Total	32



Making a thorough medical history for each pregnant woman diagnosed with acute toxoplasmosis, we found existing pets (cat), at more than half of them, respectively in 51,43% of cases. It was found acute toxoplasmosis in 6 cats (33,3%), while 4 cats (22,2%) had protective antibody for the parasite. 8 cats (44,5%) had completely negative serology for *Toxoplasma gondii* (Figure 7).



CONCLUSIONS

The patients' own initiative and the family doctor had an important role in detecting the infection with *Toxoplasma gondii*.

Pregnant women with acute toxoplasmosis were diagnosed at a rate of 14,6% of cases.

Protective antibodies against *Toxoplasma gondii* represented 25,4% of cases.

Distribution according to the age of pregnant women diagnosed with acute toxoplasmosis showed as predominant age the group 21-25 years (40%) and 26-30 years (28,6%).

Toxoplasma IgG avidity test was performed in all women with positive IgM *Toxoplasma gondii* antibodies. In 68,6% of cases it revealed a high avidity, the pregnant women being diagnosed in the first trimester. In these cases the infection occurred before achieving conception, thus, there was no need for abortion.

91,3% of pregnant women with acute toxoplasmosis had general manifestations.

The most frequent general manifestation was asthenia in 62,5% of cases.

33,3% of the own cats had acute toxoplasmosis, which is possible to be the direct infected ones.

Serological screening tests are currently used in many European countries for detecting congenital and perinatal infections. (Liesenfield O, et al., 2001)

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