Analele Universităţii din Oradea Fascicula: Ecotoxicologie, Zootehnie şi Tehnologii de Industrie Alimentară, 2010

ASPECTS OF TOXOPLASMOSIS DIAGNOSIS IN WOMEN AT THE PROCREATION AGE AND PREGNANT WOMEN

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Abstract

Our objective is to identify that segment in the fertile feminine population that is the most vulnerable to the infection with Toxoplasma gondii, and thus, its intensive exploration. A number of 107 patients have been studied, between years 2007-2009. About one third of the lot under study (30%) presented spontaneous abortion in antecedents, most of the cases came from the urban environment – 62 patients (58%), the rest of 45 patients (42 %) coming from the rural area.

The distribution on age groups of the contamination with Toxoplasma gondii shows that the highest incidence was in the age range of patients of 31-35 years The age range of 26-30 mustn't be neglected.

The characteristic symptoms were lymphadenopathy with double location, respectively laterocervical and occipital with a percent of 22.42%.

Key words: pregnant women, IgM antibodies, IgG antibodies, IgA antibodies

INTRODUCTION

Toxoplasmosis is a parasitic disease caused by the protozoan *Toxoplasma gondii* (Ambrozie-Th. P. Pelloux; The parasite infects most genera of warm-blooded animal (Anfray et al;) , including humans, but the primary host is the felid (cat) family. Animals are infected by eating infected meat, by ingestion of feces of a cat that has itself recently been infected, or by transmission from mother to fetus (Couvreur). Although cats are often blamed for spreading toxoplasmosis, contact with raw meat is a more significant source of human infections in many countries, and fecal contamination of hands is a greater risk factor (Sternberg; Mandell) .

OBJECTIVES

Our objective is to identify that segment in the fertile feminine population that is the most vulnerable to the infection with *Toxoplasma gondii,* and thus, its intensive exploration.

If in other developed countries, such as France, the serologic screening is made systematically for all the fertile women and is compulsory for intrapartum women, our objective, at least in this stage, is the approach of those women that present suggestive signs and symptoms for an achieved toxoplasmosis, or those that live in an intensely parasite-contaminated environment, as well as, the women that are recorded for infertility, repeated

abortions or premature deliveries. Those women who delivered babies infected with congenital toxoplasmosis have been taken in view, and they will be monitored till the healing of the infection.

Other objective is the highlight of the epidemiological aspect of these contaminations, as well as, the study of the immunocompetent and immune suppressed patients with toxoplasmosis.

MATERIAL AND METHOD

A number of 107 patients have been studied, between years 2007-2009, young women at the procreation age, with a medical history suggestive for an infection with *toxoplasma gondii*, achieved more or less recently, patients sent for exploration by the obstetrics and gynecology services, as well as, by the family planning offices, for problems that have in view the infertility, abortions and premature deliveries, as well as, pregnant women that presented in antecedent spontaneous abortions or to which the problem of *toxoplasma gondii* infection was had in view. The respective patients came from Bihor and Cluj counties (Romania) and Hajdu-Bihar (Hungary).

The diagnosis was based on lab investigations (serology through ELISA method, CRP, avidity tests). For the substantiation of the diagnosis, the anamnesis of the patient, personal heredo-collateral medical history, disease history, objective exam and paraclinical data in dynamics were taken into account.

The epidemiological study consisted in the classification of the contamination by toxoplasma (Kleegman; Montaya) according to: sex, age, origin environment and geographic area.

RESULTS AND DISCUSSION

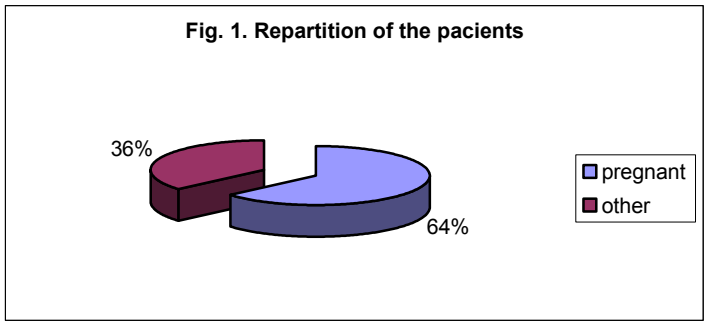
Out of the 107 patients infected with *toxoplasma gondii*, 68 were pregnant women in the first semester of pregnancy (63.55%). The rest of 39 patients were represented by women at the age of procreation (36.45%). (Figure 1.)

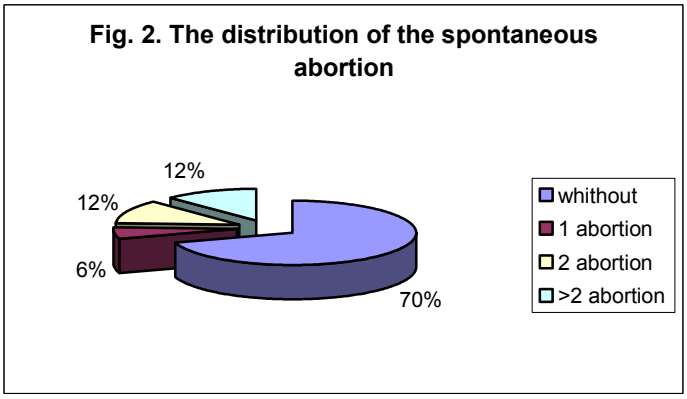
About one third of the lot under study (30%) presented spontaneous abortions in antecedents, distributed as it follows (Figure 2):

6 persons with one spontaneous abortion (6%)

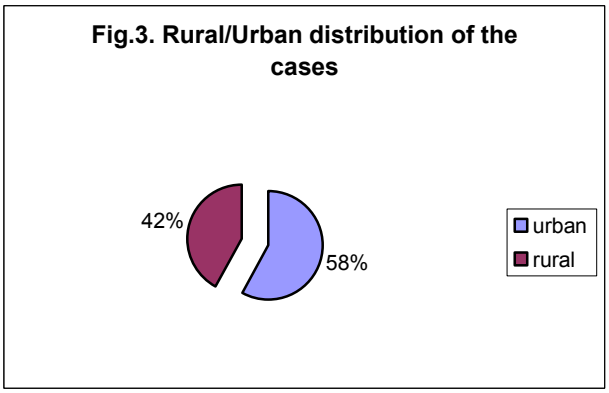
13 persons with two spontaneous abortions (12%)

13 persons with more than 2 spontaneous abortions (12%)

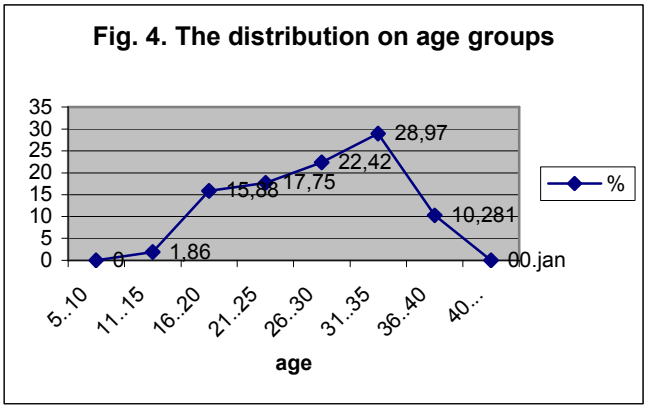




Most of the cases came from the urban environment – 62 patients (58%), the rest of 45 patients (42%) came from the rural environment. This ratio doesn't correspond to the real incidence of the disease in the population; usually, the rural environment generates more favorable conditions as the parasite to circulate and be transmitted. The increasing incidence of cases reported in the urban area to the medical services led to the results of our study (Figure 3).



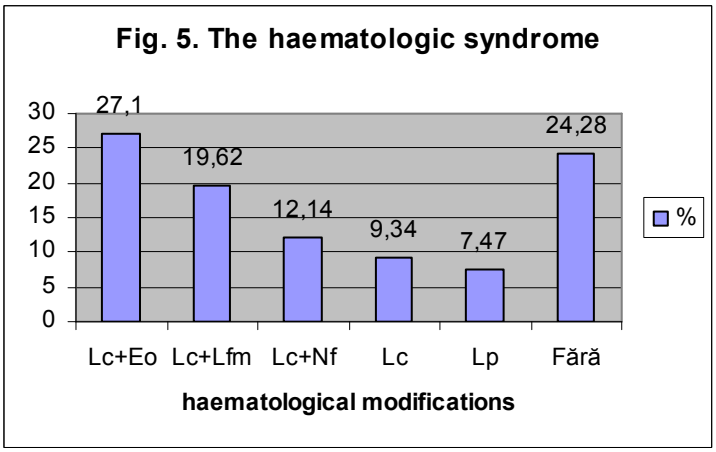
The distribution on age groups of the infection with *Toxoplasma gondii,* shows the fact that the highest incidence was in the age range of 31-35 years. The range of 26-30 doesn't have to be excluded (Figure 4)



Within the study of immunocompetent and immune suppressed cases of toxoplasmosis, we noticed the following changes:

Hematologic syndrome:

- 29 patients with leucocytosis and eosinophilia (27.1%)
- 21 patients with leucocytosis and lymphomonocitosis (19.62%)
- 13 patients with leucocytosis and neutrophilia (12.14%)
- 10 patients with leucocytosis, with no other changes (9.34%)
- 8 patients with leukopenia (7.47%)
- 26 patients with no hematological changes (24.29%)



Lc+Eo= leucocytosis + eosinophilia
Lc+Lfm= leucocytosis + lymphomonocitosis
Lc+Nf= leucocytosis + neutrophilia
Lc= leucocytosis
Lp= leukopenia

Inflamatory syndrome:

- well expressed - 51 patients (47.66%)
- moderately increased - 27 patients (25.23%)
- no changes - 29 patients (27.1%)

The most frequent symptoms at the lot under study was lymphadenopathy with different locations**:**

- 24 patients with laterocervical and occipital adenopathy (22.42%)
- 20 patients with laterocervical and submandibular adenopathy (18.69%)
- 16 patients with laterocervical and supraclavicular adenopathy (14.95%)
- 10 patients with laterocervical adenopathy (9.34%)
- 10 patients with occipital adenopathy (9.34%)
- 7 patients with occipital and supraclavicular adenopathy (6.54%)
- 20 patients with no adenopathy (18.69%)

Lat+Occ= laterocervical + occipital
Lat+Scl= laterocervical + supraclavicular
Lat= laterocervical
Occ+Scl= occipital + supraclavicular

The most frequent associated diseases in the case of *toxoplasma gondii* infection were:

- diabetes of type 2 1 case, (0.93%)
- endocrinological diseases 6 cases, (5.60%)
- neurologic diseases 6 cases, (5.60%)
- digestive diseases 7 cases, (6.54%)
- respiratory illnesses 9 cases, (8.41%)
- with no associated diseases 78 cases, (72.89%)

☻ In the lot under study, for 35 patients representing 32.71%, we highlighted through ELISA method (Chiotan; Rebedea), equivocal IgM *toxoplasma gondii* antibodies (0.500-0.599) and equivocal IgG *toxoplasma gondii* antibodies (2.0-3.0Ui/ml). 22 cases out of this number were represented by pregnant women in their first semester. The reevaluation made after three weeks revealed the positivation of the IgM *toxoplasma gondii* antibody values of over 0.599 for a number of 30 patients, 16 of these taking place in the pregnant women under study. After this time range, for 28 cases, we noticed the value increase of IgG *toxoplasma gondii* antibodies of over 3, 20 of these being pregnant.

☻ At a number of 43 patients in the lot under study representing 40.18% we highlighted positive values of IgM *toxoplasma gondii* antibodies (over 0.599), respectively equivocal IgG *toxoplasma gondii* antibodies 2-3 Ui/ml), through ELISA method; 28 cases of these taking place in pregnant women. The reevaluation made after three weeks revealed the maintenance of the values of IgM antibodies of over 0.559 for a number of 40 patients, all of them being pregnant. The value of the IgG antibodies increased for a number of 26 patients more than normal, 21 of these being pregnant women.

☻ For a number of 29 patients of the lot under study representing 27.10 %, we highlighted through ELISA method positive IgM *toxoplasma gondii* antibodies (over 0.559) and positive IgG *toxoplasma gondii* antibodies (over 3 Ui/mi), 18 cases of the total being represented by pregnant women. At the reevaluation made after 3-4 weeks, we noticed the maintenance of the values of IgM *toxoplasma gondii* more than the normal value for 16 patients, 10 of these being pregnant in the first three months of pregnancy. The value of the IgG *toxoplasma gondii* antibodies was maintained normal for 20 patients, 14 out of which being pregnant women.

The 68 pregnant women out of the lot of 107 patients were evaluated even through the avidity test to determine, as accurately as possible, the moment of contamination with *toxoplasma gondii.*

☻ Increased avidity of over 0.300 was highlighted at a number of 28 pregnant women (26.16%), 14 out of which having the avidity ranging between 0.300-0.500, 10 pregnant women having the avidity between 0.501-0.700 and four pregnant women having the avidity between 0.701-0.900; to these the initial contamination taking place with more than four months ago. The repetition of the test after three weeks highlighted the maintenance of the increased values of the avidity test over the normal value.

☻ A decreased avidity below 0.200, was highlighted at a number of 21 pregnant women (19.62), IgA *toxoplasma gondii* having values over the normal value of 1.2, fact that reveals the transmission of infection also to the fetus; the ceasing of pregnancy was decided for these cases.

☻ Average avidity of 0.2-0.3 was determined for a number of 4 pregnant women (3.73%), IgA *toxoplasma gondii* having values exceeding the normal value of 1.2, fact that reveals the transmission of the infection to the fetus, too; the ceasing of the pregnancy was decided for these women.

CONCLUSIONS

About one third of the lot under study (30%) presented spontaneous abortion in antecedents.

Most of the cases came from the urban environment – 62 patients (58%), the rest of 45 patients (42 %) coming from the rural area.

The distribution on age groups of the contamination with *Toxoplasma gondii* shows that the highest incidence was in the age range of patients of 31-35 years The age range of 26-30 mustn't be neglected.

The characteristic symptoms were lymphadenopathy with double location, respectively laterocervical and occipital with a percent of 22.42%.

The most frequent hematological modification was represented by leucocytosis and eosinophilia with a percent of 27.1% of the cases.

According to the national and international bibliography, we approached a modern methodology specific to adequate researches.

The diagnosis was based on the interpretation of lab analysis (serology through ELISA and CRP methods, avidity tests). For the substantiation of the diagnosis, the patient's anamnesis, heredo-collateral antecendents, personal antecedents, disease history, objective test and paraclinical data in dynamics have been taken into account.

Having in view the complexity of the problem, the next research will focus on the study of the congenital infections, on the reduction of the fetus-contamination risk.

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