

## CLINICO-BIOLOGICAL ASPECTS IN CONGENITAL TOXOPLASMOSIS

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### **Abstract**

*A number of 9 pregnant women, respectively their newly-born babies were under study between 01.01.2007-30.08.2010, women that gave birth to a conceiving product susceptible of toxoplasmosis.*

*Two thirds of the mothers infected with toxoplasma gondii came from the rural environment (66%), among the possible risk factors, we identified the consumption of raw or thermally improperly processed meat. The most frequent consumption was that of products that have used minced meat (meatballs, highly seasoned forcemeat balls). An increase in the procreation age 31-35 years (44.4%) and 36-40 years (33.3%) is noticed, thus, the prevalence of the infection with toxoplasma gondii increases altogether with the age, due to the increase of the possibility of contamination.*

**Key words:** congenital toxoplasmosis, raw meat, IgM antibodies, IgG antibodies, IgA antibodies

### **INTRODUCTION**

Congenital toxoplasmosis is caused by transplacental acquisition of *Toxoplasma gondii* (Couvreur; Mandell; Chiotan; Rebedea). Manifestations, if present, are prematurity, intrauterine growth restriction, jaundice, hepatosplenomegaly, myocarditis, pneumonitis, rash, chorioretinitis, hydrocephalus, intracranial calcifications, microcephaly, and seizures. Diagnosis is by serologic testing (. Sternberg ). Treatment is with pyrimethamine, sulfadiazine, and leucovorin. *Toxoplasma gondii*, a parasite found worldwide, causes congenital infection in about 1/10,000 to 80/10,000 births (Kleegman; Kleegman).

With rare exception, congenital toxoplasmosis is due to a primary maternal infection during pregnancy (Ambrozie). Infection with *T. gondii* occurs primarily from ingestion of inadequately cooked meat containing cysts or from ingestion of oocysts derived from cat feces (Anfray et al.). The rate of transmission to the fetus is higher in women infected later during pregnancy. However, those infected earlier in gestation generally have more severe disease. Overall, 30 to 40% of women infected during pregnancy will have a congenitally infected child.

Pregnant women infected with *T. gondii* generally do not have clinical manifestations, although some may have a mild mononucleosis-like syndrome, regional lymphadenopathy, or occasionally chorioretinitis. Similarly, infected neonates are usually asymptomatic at birth, but

manifestations may include : Prematurity, Intrauterine growth restriction, Jaundice, Hepatosplenomegaly , Myocarditis, Pneumonitis, Various rashes.

Neurologic involvement, often prominent, includes chorioretinitis, hydrocephalus, intracranial calcifications, microcephaly, and seizures. The classic triad of findings consists of chorioretinitis, hydrocephalus, and intracranial calcifications (Mandell; Connor) .

## **OBJECTIVES**

The women had in view are those who gave birth to babies with congenital toxoplasmosis and who will be monitored till the healing of the infection.

A second populational segment will be the newly-born babies and little babies who are born with medical history specific to possible congenital toxoplasmosis, presenting lesions in the ocular area and in the central nervous system.

Other objective is the emphasis of the epidemiologic aspect of these contaminations, as well as, the study of the immunocompetent and immunosuppressed patients with toxoplasmosis.

## **MATERIAL AND METHOD**

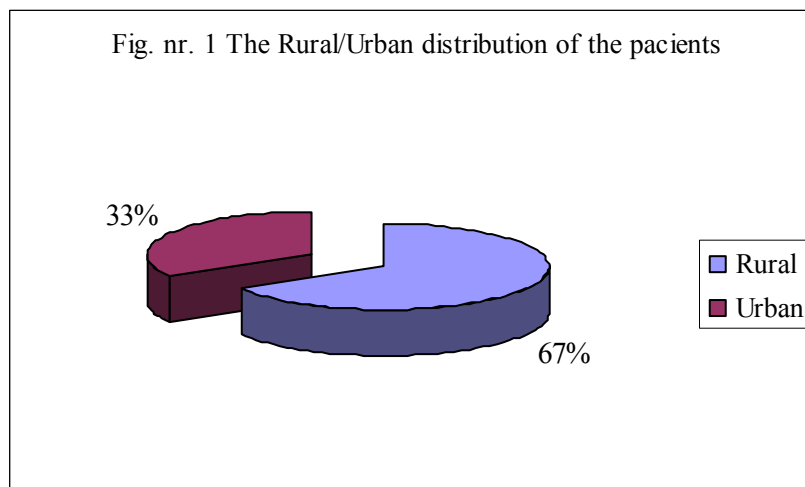
A number of 9 pregnant women, respectively their newly-born babies were under study between 01.01.2007-30.08.2010, women that gave birth to a conceiving product susceptible of toxoplasmosis. The respective patients came from Bihor and Cluj counties (Romania) and Hajdu-Bihar (Hungary).

The diagnosis was based on lab investigations (serology through ELISA and CRP, avidity tests). The patient's anamnesis, herredocollateral antecedents, personal antecedents, pregnancy evolution, objective exam and paraclinic data in dynamics have been taken into account for the substantiation of the diagnosis.

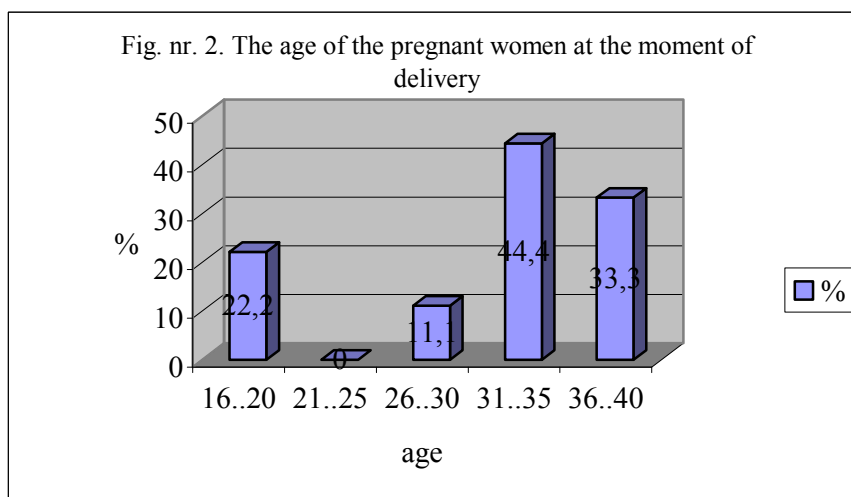
The epidemiologic study consisted in the classification of contaminations through toxoplasmosis according to : sex, age, origin and geographic area.

## **RESULTS AND DISCUSSION**

Out of the 9 cases of congenital toxoplasmosis, six cases came from the rural area (67%) and the rest of 3 cases came from the urban area (33%). (Figure nr. 1)



The age of the pregnant women at the moment of delivery is presented in the following table and diagram, where it is noticed the increase of the procreation age. It was statistically proved that the prevalence of the infection with *Toxoplasma gondii* increases altogether with the age, due to the increase of contamination possibilities. (Figure nr. 2)



Out of the nine cases that gave birth to fetuses infected with *toxoplasma gondii*, seven has presented increased IgG antibodies for *toxoplasma gondii* and normal IgM antibodies, fact that suggests that probably the infection occurred in the first months of pregnancy, the rest of two persons presenting equivocal IgG antibodies for *Toxoplasma gondii* and

equivocal IgM antibodies (ELISA). For these two persons, CRP was also made for the DNA of *Toxoplasma gondii* which gave positive results.

For two pregnant women, where *Toxoplasma gondii* infection was suspected, IgA antibodies were also determined as positive resulting, thus, the congenital transmission of the infection with *toxoplasma gondii* to the conceiving product.

During the gestation period only two pregnant women has presented symptoms, manifested through slight metrorrhagias in months 3, 4, and 5, associated with bilateral laterocervical adenopathy, slightly sensitive when touching. These two pregnant women presented positive IgA antibodies in the 5th month of their pregnancy.

Out of the 9 patients under study, 6 presented associated diseases:

- 3 cases of type 1 diabetes
- 2 cases of respiratory illnesses
- 1 case of HIV infection

The weights at birth of the newly-born babies infected with *Toxoplasma gondii* were: 3 cases with weight between 2500g - 2700g

- 2 cases with weight between 2700g - 2900g
- 3 cases with weight between 2900g - 3000g
- 1 case with weight over 3300g

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

Hematologic syndrome:

- 3 patients with leucocytosis and eosinophilia (33.3 %)
- 2 patients with leucocytosis and lymphomonocytosis (22.2 %)
- 2 patients with leukopenia (22.2 %)
- 2 patients with no hematological changes (22.2 %)

Inflammatory syndrome:

- well expressed - 5 patients (55.5 %)
- moderately increased - 3 patients (33.3%)
- no changes - 1 patient (11.1 %)

The clinical examination of the newly-born baby infected with *toxoplasma gondii* emphasized some elements of cranio-facial dysmorphism.

- ogival palate in 2 cases
- punctiform AF in 2 cases
- microcrania with low-inserted ears in 2 cases
- 3 cases with no cranio-facial changes

The ophtalmologic test highlighted the presence of anorthopia for 4 newly-born babies, being a precocious sign of chorioretinitis in children, but none of the cases presented changes of chorioretinitis during the examination moment.

## CONCLUSIONS

Two thirds of the mothers infected with *toxoplasma gondii* came from the rural environment (66%).

Among the possible risk factors, we identified the consumption of raw or thermally improperly processed meat. The most frequent consumption was that of products that have used minced meat (meatballs, highly seasoned forcemeat balls).

An increase in the procreation age 31-35 years (44.4%) and 36-40 years (33.3%) is noticed, thus, the prevalence of the infection with *toxoplasma gondii* increases altogether with the age, due to the increase of the possibility of contamination.

For 6 pregnant women (66.6%), associated diseases were noticed during the pregnancy.

Only in one situation the weight of the newly-born baby exceeded 3000g. The clinical examination revealed the presence of cranio-facial dysmorphism in 66.6% of the cases.

The elaboration of a strategy for the correct primary prevention of the infection with *toxoplasma gondii* is necessary. The prevalence could be accomplished with minimum costs, but with net favorable effects upon the population health. Training guidebook must be also elaborated for the doctors to improve the process of being informed and information quality.

In the case of the secondary prevention, a national serological program \_monitoring suitable for the pregnant woman during the pregnancy should be elaborated.

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