Congenital Toxoplasmosis Value of Antenatal Treatment

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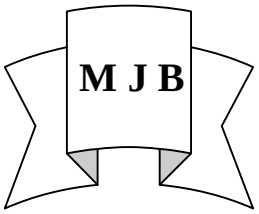

Abstract

A cohort study was done from April / 2004 to December / 2005 at Babylon Hospital for Maternity and Children, and included 200 pregnant women with Toxoplasmosis infection were treated for 4-6 weeks and the outcome of pregnancy was compared before and after treatment.

The analysis showed that the number of abortions was decreased after treatment, and also the rate of congenital abnormalities was decreased after treatment.

داء القطط الولادي واهمية العلاج قبل الولادة

الخلاصة:

دراسة تفصيلية أجريت في مستشفى بابل للنسائية والاطفال للفترة من شهر نيسان عام 2004 ولغاية كانون الأول عام 2005.

* تضمنت دراسة مائتين من النساء الحوامل المصابات بداء القطط أثناء الحمل.

- وقد تم معالجة المصابات بالأدوية الضرورية لفترة 4-6 أسابيع .

- وقد تم متابعة الحوامل المصابات طيلة فترة الحمل .

- وتم دراسة نتائج الحمل قبل وبعد العلاج.

* أظهرت الدراسة أن عدد الإسقاطات قد انخفض بعد العلاج وكذلك معدل التشوهات الخلقية قد انخفض أيضاً بعد العلاج.

Introduction:

Toxoplasmosis is caused by infection with the protozoan parasite called Toxoplasma gondii .Acute infection in pregnant women can be transmitted to a fetus and can cause severe illness (e.g. mental retardation, blindness and epilepsy).

Infection occurs via ingestion of contaminated under-cooked food (especially meat) or transplacentally during acute infection in pregnancy, leading to congenital toxoplasmosis.

Infection can also occur by ingesting the oocytes in cat feces (1). Contamination may also occur by transplanted organs (2).Worldwide about 0.5% to 1% of pregnant women become contaminated by Toxoplasma gondii (3).

In immunocomponent hosts, infection is usually asymptomatic. Symptoms, when they do occur, are mild and non-specific (e.g lymphadenopathy, fatigue, fever, malaise and myalgia) (4).Congenital infection, however, is a very serious condition with a lethal prognosis in about 10% of cases and a high proportion of disabling sequelae.

Toxoplasmosis is a life long condition but the fetus is only at risk of congenital disease when acute infection occurs in pregnancy.

When the mother is chronically infected by Toxoplasma.gondii, the parasite is dormant in the maternal tissues and there is no parasitaemic phase (5).

Infection in early pregnancy can lead to miscarriage or intra-uterine death.Although the classic triad of congenital toxoplasmosis includes chorioretinitis, intracranial calcifications, and hydrocephalus, most infected infants are asymptomatic at birth. It is important to remember that, although asymptomatic at birth, most untreated infants will go on to develop some manifestations of the disease, in particular, up to 85% will develop chorioretinitis (blindness, impaired vision); up to 75% will have some form of developmental delay; and 10% to 30% will have moderate hearing loss.

Seizures and nerve palsies are also common but may be delayed, sometimes for years. Chorioretinitis may not occur before adolescence, so appropriate follow up is very important (6,7).The prescence of a high Toxoplasma specific IgM antibody titer combined with a high IgG titer probably indicates an acute infection within the previous 3 months.

Once acute maternal infection is diagnosed, prenatal diagnosis of foetal infection is necessary.Prenatal diagnosis is based on the detection of the parasite or its constituents by techniques of molecular biology.Foetal blood sampling has now been abandoned at the expence of amniocentesis with polymerase chain reaction (PCR) and mouse inoculation of amniotic fluid (8).

PCR is performed from 18 weeks gestation onwards and at least two months after the sero conversion.Mouse inoculation from the sample is still performed as a control and to study the different serotypes of the parasite (9).Foetal ultrasound is also essential to the management of gestational infection and its role is both diagnostic and prognostic. Cerebral ventricular dilatation

is the most common sign and it is a poor prognostic sign. U/S also used to look for slowed growth, calcium deposits in the brain, a very small brain, and swelling of the abdomen.

Prenatal treatment consists of a combination of pyrimethamine 50 mg/kg/day and sulfadiazine 3 g/day with folinic acid supplementation (50 mg twice weekly). This regimen is given for four weeks alternating with two weeks of spiramycin throughout the pregnancy (10).

When the PCR is negative, it is important for the mother to continue taking spiramycin because of the risk of late transmission to the foetus.Spiramycin is prescribed generally in the first trimester. Because of concerns about teratogenicity, the combination of pyrimethamine and sulfadiazine is usually prescribed in the second and third trimesters.Sulfadoxine may be an alternative to sulfadiazine, although more research is necessary on that matter (11).

We can take simple steps to prevent the infection and problems for the baby. While pregnant, take precautions when cleaning litter boxes, working outdoors and handling food (20).If the fetus is infected early in pregnancy and is diagnosed with brain damage, terminating the pregnancy is considered a reasonable medical option (21).

The aim of the study to summarise the evidence that treating toxoplasmosis in pregnancy improves the pregnancy outcome.

Subjects and Methods

We included studies of 200 pregnant women with toxoplasma infection, defined by an increase in specific IgG titres from paired sera or by a high titre of specific IgG at the first antenatal test.

Women could have been tested when they attend Babylon Hospital for Maternity and Children or through incidental testing carried out by their specialist doctor at a privid clinic when suspecting toxoplasmosis infection. The study extended from the period of April /2004 to December /2005.

All the pregnant women with proven toxoplasma infection included in our study were treated with the following drug regiems:

1- Spiramycin alone or
2- Spirmycin + sulphamethoxazole.

The treatment continues for 4-6 weeks. And we follow the whole course of pregnancy, and the outcome of our patients regarding abortion, stillbirth, any congenital abnormality were compared before and after treatment

Stastical analysis

Significance was assessed by Chi-square test.

A difference between values was considered significant* when P< 0.05, and very significant** when P<0.01.

Results

Table (1): shows the number of abortion before treatment was 152 (96: was first trimester abortion; 56: was second trimester abortion).

The number of abortions was decreased after treatment (with spiramycin alone or with spiramycin and sulphamethoxazole for 4-6 weeks) to 18 (6: was first trimester abortion; 12: was second trimester abortion) which is statistically significant P<0.001.

Table (2): shows the number of congenital abnormality before treatment was 22, and decreased after treatment to 4 (which is statistically significant P<0.001).

Table (3): shows that of 200 pregnant women with Toxoplasmosis; 56 patients receive spiramycin alone for 6 weeks; and 144 patients receive spiramycin and sulphamethoxazole for 4 weeks.

Discussion

Toxoplasmosis for the first time has about a 40% chance of passing the infection to her fetus. However, the risk and severity of the baby's infection depend upon when in the pregnancy it occurs.

Studies suggest that, when mothers are infected in the first trimester, about 15% of fetuses become infected, as compared to a about 30% in the second trimester and about 60% in the third trimester. However, the consequences of the fetal infection are more severe the earlier in pregnancy the infection occurs (12).

Infected babies should be treated with two medications, pyrimethamine and sulfadiazine, these drugs should be continued throughout the first year of life, and in some cases, even longer.

A study by the U.S. National Collaborative Treatment Trial found that about 75% of infected babies (including those with severe infections present at birth) who received this treatment have normal intelligence and none has developed hearing loss.

The earlier the infection occurs in pregnancy, the worse the outcome is for the fetus, both in term of survival and sequelae.

A recent study shows that among 60 fetuses infected between 17 and 23 weeks gestation, the infection was subclinical in 37 (61.7%) and 21 (35%) had severe intracranial calcifications, while among 56 fetuses infected between 24 and 36 weeks the infection was subclinical in 40 (71.4%) and only 12

(21%) had severe intracranial calcifications (13).

Spiramycin (Rovamycine), a macrolide antibiotic, might concentrate in the placenta and therefore might prevent transmission to a fetus (14).One study estimated that spiramycin decreases transmission of toxoplasmosis by about 60% (15).When mothers are infected during the 6 months immediately before pregnancy, congenital transmission is rare (16).

A French study comparing 52 pregnant women treated with pyrimethamine or sulfadiazine alternating with spiramycin, 72 untreated matched controls suggested that treated mothers had infants with less severe disease at birth (17).

In addition, accumulating evidence suggests that earlier identification and prolonged treatment (1 year) of infants with congenital toxoplasmosis decreases the severity of acute and long-term morbidity, such as impairment of vision and hearing and neuro developmental delay (18,19).

Investigations continue to seek better ways to diagnose and treat toxoplasmosis during pregnancy, in order to prevent fetal infections.For example, one March of Dimes grantee is studying the role of a Toxoplasma protein in enabling the parasite to invade fetal cells. His goal is to develop drug treatment to prevent fetal infections.The possibility of Toxoplasma vaccine is also promising, although it is still at its embryonic stages.

Conclusion

Toxoplasmosis remains a serious disease although recent advances in diagnosis and treatment have greatly ameliorated the prognosis for the affected infants.

Routine screening is currently being discussed in several European countries because of the well proven efficiency of the treatment.

When infection in utero is documented, using PCR (polymerase chain reaction) on an amniotic fluid sample, the mother should be started on a combination of pyrimethamine and sulfadiazine with folinic acid supplementation or we use a spiramycin.

Infected infants should be treated postnatally up to one year of age with the same drugs, whether the infection is overt or latent and follow-up is important up to adolescence.

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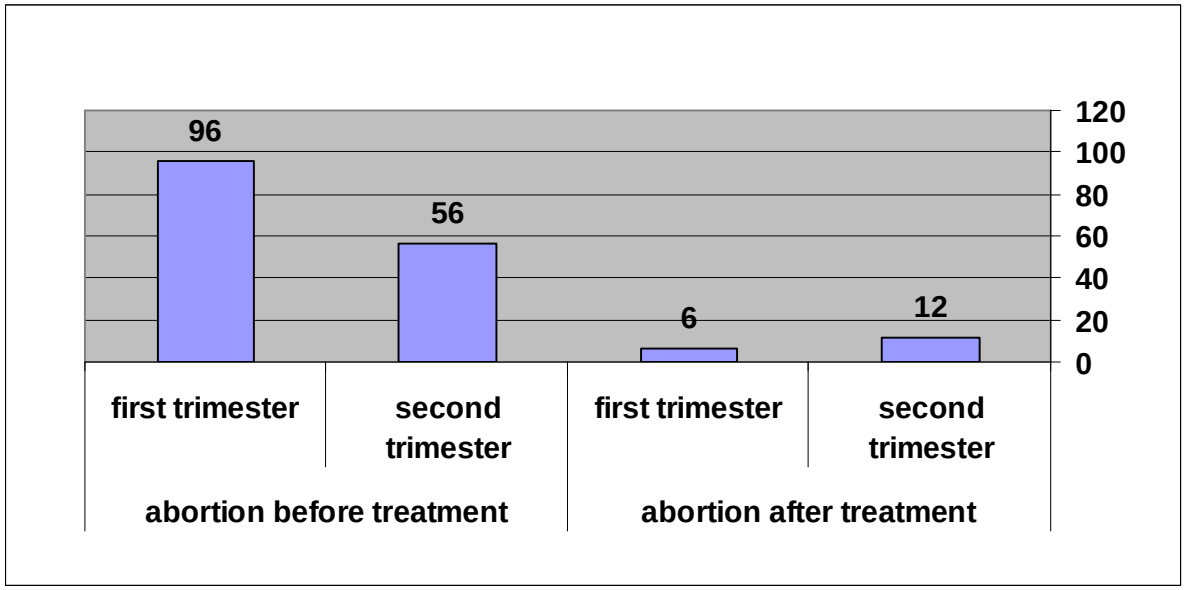

Figure (1): Comparison shows number of abortion before and after treatment of toxoplasmosis

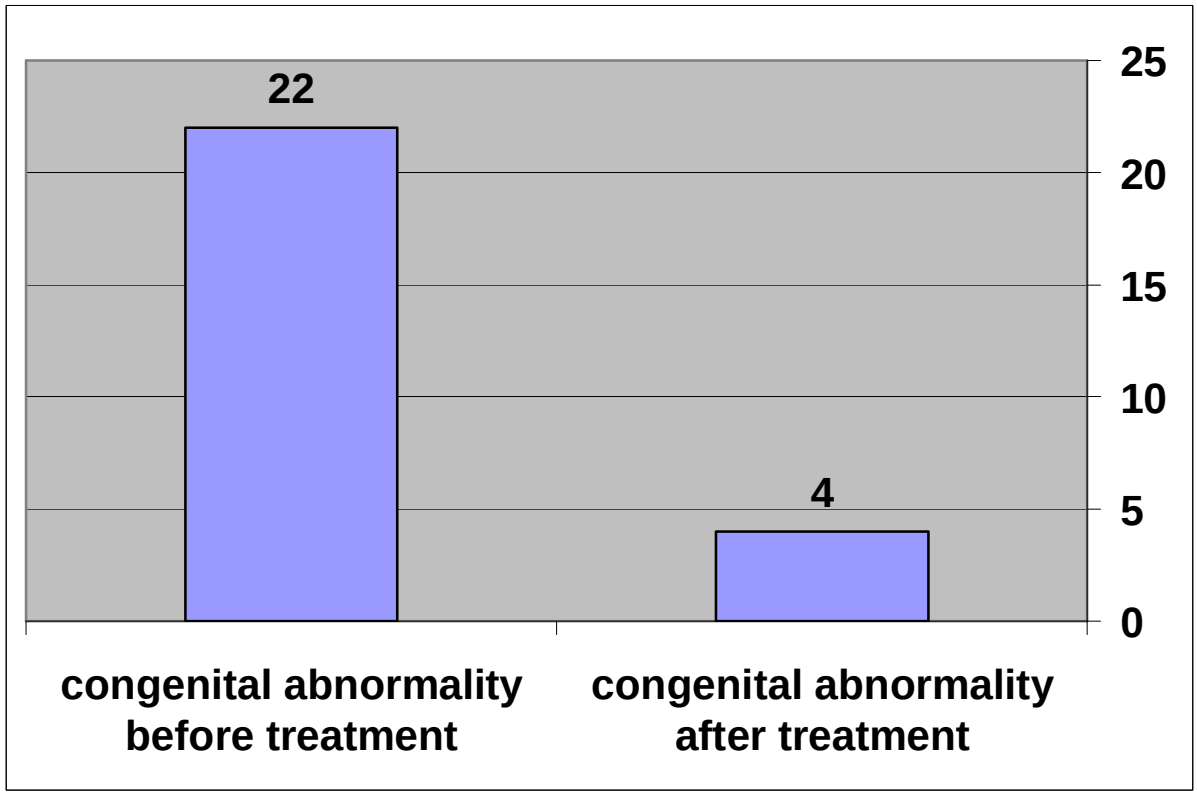

Figure (2): Shows number of congenital abnormality before and after treatment of toxoplasmosis

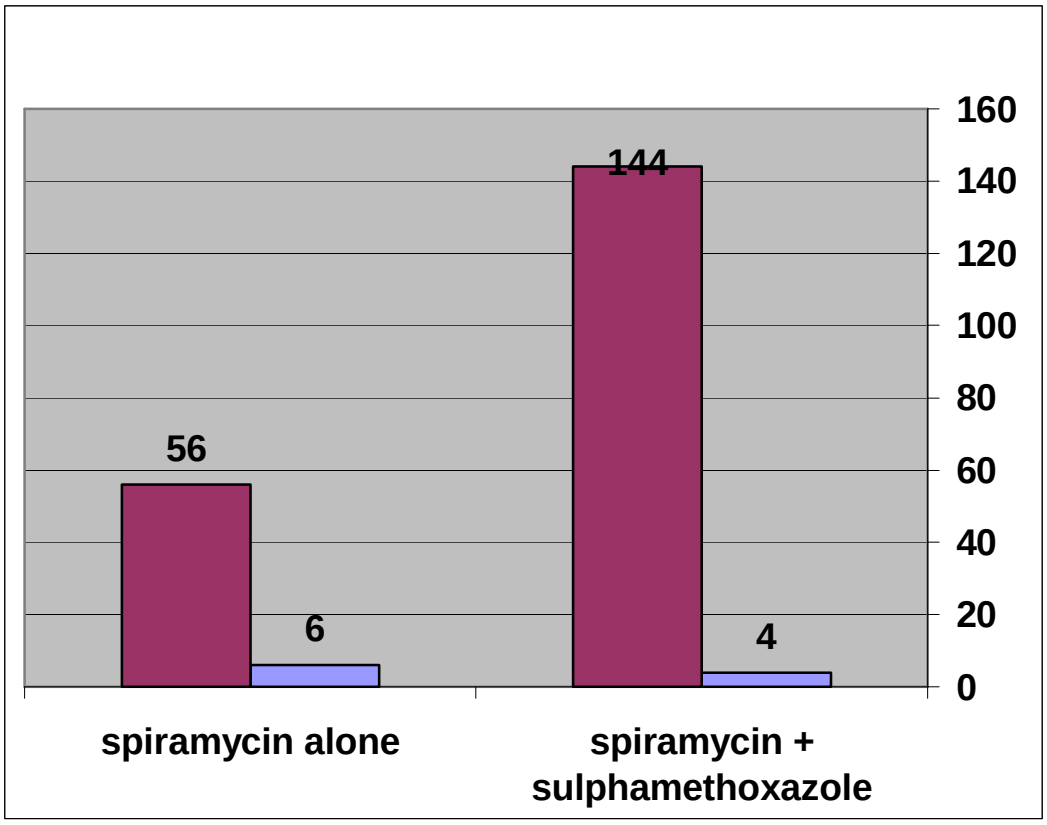

Figure (3):-Shows type and duration of treatment of toxoplasmosis

Table (1):Comparison shows number of abortion before and after treatment of toxoplasmosis.

Number of patient	Abortion before treatment		Abortion after treatment	
200	152		18	
	First trimester	Second trimester	First trimester	Second trimester
	96	56	6	12

Table (2): Shows number of congenital abnormality before and after treatment of toxoplasmosis

Number of patient	congenital abnormality before treatment	congenital abnormality after treatment
200	22	4

Table (3): Shows type and duration of treatment of toxoplasmosis

Type of treatment	No. of patient	duration of treatment (weeks)
spiramycin alone	56	6
spiramycin + sulphamethoxazole	144	4