



Rima McLeod

Year-long treatment appears to benefit infants with congenital toxoplasmosis

Devon Schuyler

A ONE-YEAR course of treatment with pyrimethamine and sulfadiazine appears to improve outcomes for children born with toxoplasmosis, according to the most recent follow-up from an ongoing US study.

Almost all the outcomes were better than those previously reported with no treatment or treatment lasting less than a month, and most of the children were entering adolescence with normal cognitive and motor function. Most of the treated children had no recurrent eye lesions or seizures. None had sensorineural hearing loss.

week for the remainder of the year. The infants also received leucovorin to minimise the toxicity of the pyrimethamine.

The study had two phases. In the feasibility/observational phase, 35 infants received either the low- or high-dose regimen. In the randomised phase, the infants were first evaluated to determine whether their disease was none/mild or severe at birth based on the degree of systemic involvement and neurologic findings and whether chorioretinitis lesions were present. After stratifying by disease severity, 85 infants were randomised to either the low- or high-dose regimen.

“Children with similar illness at birth who were not treated or treated for only one month were reported in earlier series to have substantial cognitive impairment that worsened over time, motor abnormalities, recurrent eye disease and some had sensorineural hearing loss”

Rima McLeod MD

“Seventy per cent to 80% of the children are progressing normally through school and are doing well at a median age of 10 years. Many children who were very ill at birth are highly functional. Children with similar illness at birth who were not treated or treated for only one month were reported in earlier series to have substantial cognitive impairment that worsened over time, motor abnormalities, recurrent eye disease and some had sensorineural hearing loss. There is a subset of the children in our study who have significant irreversible impairments, however,” said Rima McLeod MD of the University of Chicago in an interview with *EuroTimes*.

Two doses of Sulfadiazine

The study, published in *Clinical Infectious Disease* (May 2006; 42:1383-1394), involved 120 infants who had been diagnosed with congenital toxoplasmosis at less than 2.5 months of age. The children travelled at pre-specified ages to Chicago for evaluation.

All infants were treated with 100mg/kg/day of sulfadiazine, divided into two doses, for one year. Patients also received either low-dose or high-dose pyrimethamine (1mg/kg). The low-dose regimen involved daily pyrimethamine for two months, while the high-dose regimen involved daily pyrimethamine for six months. In both cases, the daily regimen was followed by treatments three times a

A total of 61 infants followed the low-dose regimen, while 59 followed the high-dose regimen. More infants fell into the severe category (96) of disease than into the none/mild category (24). The study authors said that they had difficulty recruiting patients who fell into the none/mild category because the disease is rarely recognised in children without substantial symptoms at birth in the US, with the exception of Massachusetts and New Hampshire where identifying *Toxoplasma* infection is part of routine screening for all newborns, and in some obstetrical practices where serologic screening is offered to pregnant women.

The study was designed so that each patient would be evaluated as close to the age of birth as possible, and again at ages one, 3.5, five, 7.5, 10, 15 and 20 years. In order to minimise the effect of socioeconomic status on the ability of families to participate, the study covered cost of travel and accommodations in Chicago. The study also arranged for medication for families whose insurance did not cover the cost.

Follow-up in Chicago

Nearly all the families needed to fly to Chicago for follow-up visits, but compliance was reasonably good: 77% of those in the low-dose randomised cohort and 76% of those in the high-dose randomised cohort attended at least one of their last two consecutive evaluations. The children have been followed until an average age of 10



Courtesy of National Eye Institute, National Institutes of Health

years and the study is ongoing.

The researchers found that all the infants without substantial neurologic disease at birth had normal cognitive, neurologic and auditory outcomes, and that 91% had no new eye lesions. Of the 96 children with severe disease at birth, all had normal hearing, 80% had normal motor function, 73% had normal IQs, 84% had no significant decrease in IQ score and 64% had no new retinal lesions. However, vision was impaired in 85% of patients. In most cases, the retinal disease that caused the vision impairment was present at birth.

Vision impairment among children with severe disease was the only finding that did not show significant improvement over the results from earlier studies. This might have occurred because the structural damage to the eye at birth had already occurred prenatally and was not reversible, with a possible contribution of improved survival for children who were very ill at birth.

“That result may be reflecting better survival of very sick kids,” said Gary N Holland, MD, of the Jules Stein Eye Institute at the University of California, Los Angeles, in an interview with *EuroTimes*.

A total of 11 children in the study died. Of these, nine had severe central nervous system disabilities and died from pneumonia; the other two died in accidents. An independent review found that none of the deaths were associated with toxoplasmosis treatment.

The most common side effect from the treatment was neutropenia, which was reversible in all cases by temporarily withholding treatment. Side effects were similar in the low- and high-dose groups.

Most children faring well

Dr McLeod pointed out that further follow-up of these patients is essential because eye disease could potentially flare up during adolescence.

“Nobody knows what’s going to happen to these children in the future. Are the

treated children going to be free of recurrent eye disease and otherwise remain well, and are their kids going to be fine?”

Congenital toxoplasmosis affects an estimated one to five infants per 10,000 in Europe and the US. Dr McLeod believes a case can be made for routine screening of mothers and newborns in the US to enable prompt diagnosis and treatment of this congenital parasitic infection which causes meningoencephalitis and eye damage, as is already done in several European countries, including France and Austria.

Kami Kim MD of the Albert Einstein College of Medicine, Bronx, New York, stopped short of this recommendation, but wrote in an editorial that accompanied the study that “a more concerted effort should be made to evaluate the cost effectiveness of identification and treatment of all cases of congenital toxoplasmosis.” Dr Kim agrees that a case can be made for routine screening of newborns. She said, “Given the significant improvement in outcomes with treatment, more intensive efforts should be made to increase awareness among obstetricians and pediatricians so that at-risk patients are identified early.”

“I think it’s an important study,” Dr Holland told *EuroTimes*. He said that although ophthalmologists do not take primary responsibility for treating newborns with congenital toxoplasmosis, even if the eyes are involved, “they do need to be aware that children who have known congenital infections are at risk for later eye disease, even if they had a normal exam at birth.”

rmcleod@midway.uchicago.edu

kkim@aecom.yu.edu

uveitis@jsei.ucla.edu