First case of congenital toxoplasmosis from Nepal

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ABSTRACT

Reportedly, nearly half of the Nepalese are *Toxoplasma* seropositive. However, neither the prevalence of congenital toxoplasmosis (CT) nor the confirmed case to CT is reported from Nepal yet. In this case report, we report the first case of CT in a 53 days old full term male baby (weight: 2,600 grams) delivered by caesarean section. The baby had hepatosplenomegaly and optic nerve coloboma with large scar in the right eye. The TORCH panel test showed significantly high *Toxoplasma* IgM antibody level (5.77 *OD Ratio*) compared with IgM antibody level against other agents. The baby was diagnosed as a case of CT and treatment was started accordingly. The baby, however, did not improve with the treatment and died after six days. The immediate cause of death was cardiorespiratory failure with antecedent cause of liver failure, renal insufficiency with thrombocytopenia.

Keywords: Congenital toxoplasmosis, *Toxoplasma*, Nepal.

Congenital toxoplasmosis (CT), caused by *Toxoplasma gondii* - a coccidian protozoan parasite, is an important neonatal disease. It occurs due to the infection of fetus by the parasite, when the parasites cross the transplacental barrier; called vertical transmission. CT usually results from the primary *Toxoplasma* infection of non-immune mother during pregnancy either through ingestion of oocysts released in cat feces and matured in soil, ingestion of tachyzoites and/or bradyzoites present in raw and/or under cooked meat or inoculation of tachyzoites and/or bradyzoites through skin abrasion/ wound including organ transplantation and others.[1]

In man (including animals and birds), *T. gondii* infect all nucleated cells and destroys them including those of macrophages, the professional phagocytes. The outcome of fetal infection may be mild or severe primarily depending on age of pregnancy - earlier the infection more severe the damage (including still birth and abortion) occur. The classic triad of signs suggestive of CT includes chorioretinitis, hydrocephalus, and intracranial calcifications.[2] CT in live born baby may manifest as hydrocephalus, microcephaly, epilepsy, cerebral calcification and chorioretinitis[3] including hepatosplenomegaly, lymphadenopathy, thrombocytopenia, seizure and others.[2]

It has been estimated that half of the world population is infected with *T. gondii*. However, the seroprevalence varies from zero percent in *Eskimos*[4] to as high as 90% in certain study population elsewhere.[5] In Nepal, nearly half of the apparently healthy Nepalese are *Toxoplasma* seropositive.[1] The reported seroprevalence in Nepal, however, vary from one area and community to another.[1,6-15] The prevalence of CT in Nepal, however, is not reported yet. In this report, we report a case of CT which, to the best of our knowledge, constitutes the first case of CT from Nepal.

CASE REPORT

A 53 days old male baby (belonging to *Indo-Aryan* ethnic group) from eastern Nepal (Udaypur District), presented at the Pediatric Department (Nepal Medical College) with history of yellow discoloration of body for two weeks, abdominal distension for last three days and difficulty in breathing and decreased sucking for last two days. There was no history of fever. Urine was dark yellow and stool was black in color.

The baby born to a 23 years old mother as second baby and was full-term and good condition at the time of birth, and was delivered by caesarean section for breech presentation. The weight of baby was 2.6 Kg with Apgar score of 7/10, 9/10; no active resuscitation was needed, injection of vitamin K 1 mg was given. History revealed that the first baby, also delivered by caesarean section 15th month back for breech, died due to pneumonia after five days of delivery. Present baby received BCG and first dose of OPV and DPT. There was history of neonatal sepsis at birth for which the baby was admitted in neonatal unit (for 23 days) and treated with intravenous antibiotics (cefotaxime).

On examination, the baby was icteric (2+) and sick looking. Abdomen was distended with prominent veins due to severe splenomegaly and moderate hepatomegaly

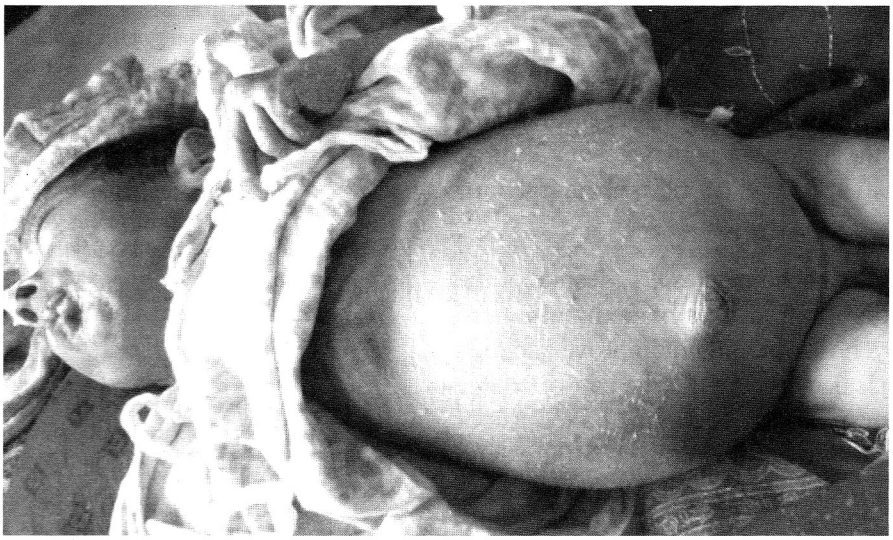

Fig. 1. Distended abdomen (hepatosplenomegaly)

(Fig. 1). Ultrasonography of abdomen revealed spleen and liver size of 10.1 cm and 7.2 cm, respectively. The laboratory investigations results were as follows: high total serum bilirubin - 18.3 mg/dl, direct bilirubin - 11.8 mg/dl, hemoglobin - 16.6 gm/dl and low platelet count - 36,000/cumm. Ophthalmological examination showed large macular chorioretinal scar in the right eye suggestive of ocular toxoplasmosis. The TORCH panel test (enzyme immunoassay) showed significantly high *Toxoplasma* IgM antibody level *(5.77 Odd Ratio)* compared with IgM antibody level against other agents (Rubella, Cytomegalovirus and Herpes simplex virus) *(all less than 0.40 Odd Ratios)*. Based on these results, the baby was diagnosed as a case of CT and treatment for CT was started using pyralfin (combination of pyrimethamine and sulfadoxin). The baby, however, did not improve with the treatment and died after six days. The immediate cause of death was cardiorespiratory failure with antecedent cause of liver failure, renal insufficiency with thrombocytopenia.

DISCUSSION

T. gondii primary infection in pregnant women occurs worldwide with the frequency of 0.1 to 1%, out of them, in 40% of the cases, the unborn child is infected[16] leading to congenital toxoplasmosis. The prevalence of CT varies from one country to another. According to one review,[17] the incidence in Britain is 0.6 sub-clinical infection and 0.09 severe illnesses per 1000 births, in USA it ranges between 1/1000 and 1/8000 live births. In France, it is 1/2000 births whereas in Slovenia, it is 2.3/1000 births. In Guatemala, the incidence is 10.9/1000 live births.[18] Interestingly, in Thailand, the CT occurred in 46.6% of children born to untreated seropositive mothers in the third-trimester while in 8.1% of seronegative mothers.[19] The prevalence of CT from Nepal, however, is not reported yet. Also the confirmed case of CT has not been reported from Nepal. This was primarily due to the unavailability of the diagnostic facility, cost involved and to some extent ignorance.

First report of *Toxoplasma* seroprevalence from Nepal (among people living in eastern Nepal) appeared in 1989.[6] Subsequently, one more report (seroprevalence among hospital staffs, medical students and blood donors) appeared in the same year.[7] Since then, many reports on *Toxoplasma* seroprevalence (24.0 to 67.1%) have appeared from Nepal among apparently healthy people of different ethnics living in different geographical areas[1,6-15] including patients of selected health problems[20] and common meat animals.[21] Among pregnant women and women with bad obstetric history (BOH), the reported seropositive rates were 55.4% and 55.8%.[20,22] Women with BOH have highest *Toxoplasma* IgM positive rate (25.0% to 40%)[20,22] indicating the BOH cases associated with *Toxoplasma* infection.

The classic triad of signs suggestive of CT includes chorioretinitis, hydrocephalus and intracranial calcifications.[2] CT in live born baby may manifest as hydrocephalus, microcephaly, epilepsy, cerebral calcification and chorioretinitis[3] including hepatosplenomegaly, lymphadenopathy, thrombocytopenia and others.[2] Though neither of hydrocephalus nor microcephaly was noted, other features like chorioretinits with optic nerve coloboma, hepatosplenomegaly, jaundice and thrombocytopenia were present, and the case was confirmed by significantly high *Toxoplasma* IgM antibody level. Whereas the antibody level (both IgM and IgG) against other TORCH agents (Rubella, Cytomegalovirus and Herpes simplex virus) were insignificant. The clinical features and the presence of significantly high level of

Toxoplasma IgM antibody level compared with the antibody level against other TORCH agents was the basis of confirmation of CT. Autopsy of the baby was not performed. Though the details case history of first baby was not available, the history of baby's death after five days of delivery appears to be suggestive of habitual CT.

After the confirmation of the case as CT, despite of the treatment with combination of pyrimethamine and sulfadoxin the baby, however, did not improve and died after six days. As has been reported,[23] the baby died due to multiple organ dysfunction. The immediate cause of death in this case was cardiorespiratory failure with antecedent cause of liver failure, renal insufficiency and thrombocytopenia.

It is recommended that each country should provide data on the incidence of *Toxoplasma* infection in pregnancy and thereby decide whether it represents a problem, and adopt specific measures.[16] France has introduced a mandatory national *Toxoplasma* screening program during pregnancy since 1970s, and that has significantly decreased the seroprevalence among pregnant women.[24] French law allows a pregnancy to be terminated at any time if two physicians, one of them being surveyer, agree that the life of mother is in danger or that there is high risk of severe damage in the child.[25]

Keeping in view of seroprevalence in different population in Nepal[1,6-15,20,22] including common meat animals[21] and present case of CT, a systematic prospective study on primary *Toxoplasma* infection during pregnancy and CT is advocated as to know the exact status of CT in Nepal and make a policy on CT in Nepal.

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