

## Rabies Exposure During Pregnancy

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**OBJECTIVE:** To study transfer of rabies virus and antibody across the human placenta.

**BACKGROUND:** Rabies virus has been shown to cross the placenta in experimental infections in many species (1-3). Transplacental transmission of this virus has also been reported following a naturally acquired infection in a pregnant cow (4). This phenomenon has not been reported to occur in man. We have recently seen two patients with rabies exposure during the third trimester of pregnancy.

**PROGRESS:** The first patient, a 43 year old Thai female, was approximately eight months pregnant when she was bitten on the leg by a stray dog. The patient cleansed the wound with soap and water and sought medical advice. No specific antirabies therapy was initiated, presumably because she was pregnant.

On 6 December 1972 the patient delivered a healthy male infant, without complications. On 8 December 1972, the patient's second postpartum day, she developed symptoms of encephalitis. Her condition progressively deteriorated and she died on 12 December 1972. Corneal impressions and a blood sample were obtained two hours prior to her death. An autopsy was performed. The corneal impressions and tissues obtained at autopsy were fixed and stained with fluorescein labelled anti-rabies globulin (5). The fluorescent antibody stained antemortem and postmortem corneal impressions were positive, while skin taken from the wound site was negative. Positive results were also obtained from the hippocampus, cerebrum, cornea and lacrimal gland. The serum sample contained no neutralizing antibodies to rabies (Titer < 1:5) by mouse serum neutralizing antibody test. Serum specimens from the infant were also negative for rabies neutralizing antibodies in the neonatal period and again one year later. The child is alive and well at two years of age.

Case 2 was a 29 year old Caucasian female. At 35 weeks gestation the patient was bitten on the hand and arm by a pet cat subsequently found to be rabid in our laboratory. The wounds were cleansed with soap and water and 4000 U of antirabies hyperimmune serum was administered intramuscularly. Immunization with killed rabies virus vaccine (Duck Embryo Origin) was initiated. The immunization schedule was single, daily injections for fourteen days followed by three boosters on days 24, 34, and 64. On 18 April 1974, at 39 weeks gestation, the patient's labor was induced and she delivered a healthy male infant without difficulty. A maternal serum sample was obtained prior to induction, and cord blood was collected at delivery. Serum samples were also obtained from the patient and her infant at three and six weeks postpartum. All serum samples were evaluated for the presence of rabies neutralizing antibodies. The results of these tests are indicated in Table 1. The patient received a booster immunization at four weeks postpartum. Both the patient and her infant are alive and well nine months after delivery.

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Table 1. Serum Rabies Neutralizing Antibody Titers Obtained from Patient 2 and her Infant

SAMPLE	TITER
Preinduction	
Maternal blood	1:70
Cord blood	1:30
Three Weeks postpartum	
Maternal blood	1:40
Infant blood	1:5
Six weeks postpartum	
Maternal blood	1:80
Infant blood	<1:5

**DISCUSSION:** The infant of the first patient demonstrated no evidence of acquiring his mother's infection. Additionally he had no detectable immune response to rabies virus. These findings suggest that the virus did not cross the placenta.

The second patient demonstrated a good immunologic response to antiserum and vaccine. The presence of antibodies in her infant's serum that rapidly decreased in titer with time suggests that these antibodies crossed the placenta resulting in passive immunization. Antibody titers in maternal blood at the time of induction of labor may be different from the titers in the cord blood because maternal IgM antibody did not cross the placenta.

It is not our opinion that, in our single case report, we have established the safety of antirabies immunization during pregnancy. We do feel, however, that pregnancy is no contraindication to rabies immunization.

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