

POSITIVE BRAIN SCAN IN TOXOPLASMOSIS

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A newborn with hydrocephalus had a positive brain scan. The area of uptake corresponded to a granular infiltrating lesion caused by congenital toxoplasmosis. A search of prior brain scans performed at this center revealed two in which positive scans were seen in adults with evidence of toxoplasmosis, but a cause and effect relationship is not clear.

It is well recognized that there are multiple causes of positive ^{99m}Tc -pertechnetate brain scans. To the list of etiologies we add another: toxoplasmosis of the central nervous system. The case of a newborn is presented in which there was confirmatory histological data for congenital toxoplasmosis.

A review of our records revealed two additional cases of positive brain scans in adults with evidence of toxoplasmosis but without histological verification.

CASE REPORTS

Case 71-659. A 2-week-old white boy, product of an uncomplicated full-term gestation and normal delivery, presented at another hospital with a 1-week history of intermittent projectile vomiting and irritability. His temperature was 104°F, pulse 130/min, and head circumference 36 cm. He had a full fontanelle. A few hours after admission he developed several twitching episodes lasting 60 sec each. Cerebrospinal fluid (CSF) obtained through a lumbar puncture revealed 99 WBC/mm³ (100% polys), glucose 48 mg%, protein 450 mg%. Gram stain, India ink stain, and Wright's stain were negative on this and on three other CSF specimens. The CSF culture was sterile.

Ampicillin, kanamycin, and phenobarbital were begun and the patient was rehydrated. His temperature dropped to 100°F and he seemed less irritable. Lumbar puncture was repeated and ampicillin was

increased. Bilateral subdural taps yielded no fluid. Over the next 5 days the infant's condition deteriorated. His head circumference increased to 38 cm. He became opisthotonic, had daily temperature spikes to 101°F, and was lethargic. At 30 days of age, because of lack of improvement, he was transferred to the Yale-New Haven Medical Center.

On examination he appeared chronically ill with hydrocephalous (40 cm), opisthotonus, and a temperature of 97°F, pulse 140/min, blood pressure 90/40 mmHg. Fundi revealed bilateral hazy media with yellow moundlike elevations of the retina bilaterally. The antibiotics were discontinued. Bilateral subdural taps again produced no fluid. A brain scan with ^{99m}Tc -pertechnetate showed an area of increased uptake in the left temperoparietal region (Fig. 1). On the second hospital day, a four-vessel angiogram showed large ventricles with a mass lesion in the left hemisphere pushing midline structures to the right. An EEG was abnormal with sharp theta activity in the left parietal-temporal area. A bubble ventriculogram showed obstruction of the left foramen of Monro. On the ninth hospital day the infant's condition deteriorated and a left frontoparietal craniotomy was carried out. A large granular infiltrating tumor was removed from the left temporal region. Postoperatively the patient developed decorticating posture and died on the 15th hospital day with *Staphylococcus aureus* pneumonia. Toxoplasma were seen in great profusion in the operative specimen of the brain. The other two cases, obtained from a review of our prior brain scans, are reviewed below.

Case 67-1408. A 34-year-old woman who had multiple exposure to cats since birth was admitted

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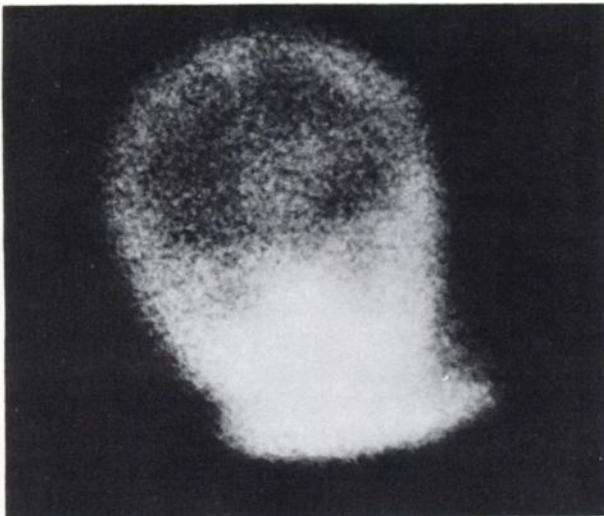


FIG. 1. Anterior scintiphoto taken after use of ^{99m}Tc -pertechnetate. Massive uptake on left side can be seen.

in 1967 with complaints of headaches, syncope, and decreasing visual acuity. On fundoscopic examination, she was found to have bilateral old inactive retinochoroiditis which was attributed to toxoplasmosis. Toxoplasma antibody test was nonreactive. CSF examination, brain scan, EEG, and skull x-rays were all reported as normal.

The patient was readmitted in 1973 because of diminution of visual activity. Physical examination showed a depressed female with a pulse of 80/min, blood pressure 160/80 mmHg, temperature 98°F. Fundoscopic examination again revealed bilateral inactive retinochoroiditis. The rest of the systemic examination was unremarkable. She had Hb 12.6 gm%, hematocrit 35, WBC 5,100/mm³ with a normal differential. BUN, creatinine, electrolytes, calcium, phosphorus, alkaline phosphatase, LDH, SGOT, SGPT, and serum protein were all found to be within the normal range. An indirect fluorescent

antibody titer for toxoplasmosis was reported to be positive and a repeat was positive in 1:256 dilution. Skull x-rays were read as normal. The brain scan showed a small region of increased activity on the left side posteriorly, seen on the posterior view.

Case 67-1278. A 58-year-old female known to have chorioretinitis since 1942 was admitted in 1967 because of left hemiparesis and right homonymous hemianopsia. Tests for toxoplasmosis were reported to be positive. The ^{99m}Tc -pertechnetate brain scan showed an area of increased uptake on the left side in the parieto-occipital area. The patient has been lost to followup.

DISCUSSION

A report by Rifaat and coworkers (1) on congenital toxoplasmosis lists some of the recent literature on the subject. Congenital toxoplasmosis can be manifested by hydrocephalus, encephalitis, convulsions, chorioretinitis, and multiple other signs and symptoms. There is little doubt that the infant reported here had a positive brain scan due to a lesion caused by toxoplasmosis and histological demonstration of the organisms was clear-cut. In the two adult cases retrospectively pulled from our records, there is less compelling evidence that the positive brain scans were due to toxoplasmosis. However, they are presented to stimulate the search for additional information on the occurrence of positive brain scans in toxoplasmosis.

ACKNOWLEDGMENT

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REFERENCE

1. RIFAAT MA, WISHAHY AG, SADEK MSM, et al: A case of congenital toxoplasmosis in Egypt. *J Trop Med Hyg* 76: 255-256, 1973