

CASE 3

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Ref. No. 66-0485.

FAMILY HISTORY: The patient was born in 1955, the last of four children, to parents 34 and 33 respectively. There was a half-brother, born to the same mother in 1941, and three sisters born in 1946, 1948 and 1951 respectively. The parents were of Dutch and Danish-Irish extraction, without known Jewish contributions.

The sister born in 1948 developed normally until she was hospitalized for convulsions and mental retardation at age 3. Skull films, electroencephalograms, urinalysis, blood sugar, calcium, phosphorus and lumbar puncture were normal. Deterioration progressed, and she died at age 6 without autopsy.

The other two sisters, half-brother and parents are living and well. Blood samples were obtained from each on March 4, 1967 for chromosome studies.

CLINICAL HISTORY: The patient developed normally until he had a convulsion at the age of 3. At that time, pneumoencephalograms showed only enlarged ventricles. At age 4 he had an occipital craniotomy with division of the tentorium. No biopsy was taken.

At the age of 5 peripheral blood was cultured for chromosomes. Three abnormal marker chromosomes with secondary constrictions in their long arms were found. They were postulated due to a translocation derived from elements of groups 1-3 and 6-12. (See Lancet, Sept. 19, 1961 pp 627-30).

The child became progressively more lethargic, unable to sit or stand, opisthotonic, unresponsive and finally deaf and blind. Grand mal as well as petit mal seizures developed. Eventually coma ensued. He died at the age of 11 years with a diagnosis of progressive leukodystrophy.

PATHOLOGIC FINDINGS: At autopsy, only a non-specific colitis was seen.

The skull and dura revealed evidence of healed bilateral craniotomy. The brain weighed 600 grams. The gyri over both cerebral hemispheres were shrunken. In some areas throughout the cortex, the atrophy had progressed to laminar necrosis. The white matter appeared very firm and showed no gross focal lesions. The septum pellucidum was intact. The corpus callosum appeared attenuated. The ventricles were uniformly dilated. The basal ganglia and brain stem were somewhat small, but the substantia nigra was normally pigmented. The spinal cord was grossly normal. Both cerebellar hemispheres were shrunken, more so in the midline and on the caudal surface.

H & E sections of cortex and midbrain are submitted. Similar changes were present throughout the cortex, basal ganglia, brain stem and spinal cord. The material in the neurones stained with PAS was acid fast but not metachromatic or birefringent. Both frozen and paraffin sections stained red-orange with Sudan IV. The inclusions seen in the midbrain stained orange with Congo-red.

The cerebellum showed extensive necrosis of the granular layer of the cortex. Purkinje cells were scant, and those present contained similar storage material.

Diagnosis: Juvenile familial amaurotic idiocy.

Point of Interest: Chromosomal abnormality.

Points for discussion: 1. Significance of chromosomal changes in this case?  
2. Any other cases with this association?