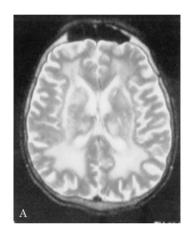
#### References

- 1. Mackey DA, Oostra R-J, Rosenberg T, et al. Primary pathogenic mtDNA mutations in multigeneration pedigrees with Leber hereditary optic neuropathy. Am J Hum Genet 1996;59:481-485.
- Bu X, Rotter JI. X chromosomal-linked and mitochondrial gene control of Leber hereditary optic neuropathy: evidence from segregation analysis for dependence on X-chromosome inactivation. Proc Natl Acad Sci USA 1991;88:8198-8202.
- 3. Chalmers RM, Davis MB, Sweeney MG, Wood NW, Harding AE. Evidence against an X-linked visual loss susceptibility locus in Leber hereditary optic neuropathy. Am J Hum Genet 1996;59:103-108.
- 4. Pegoraro E. Carelli V. Zevianni M. et al. X-inactivation patterns in female Leber's hereditary optic neuropathy patients do not support a strong X-linked determinant. Am J Med Genet 1996:61:356-362.
- Zhuchenko O, Wehnert M, Bailey J, Sun ZS, Lee CC. Isolation, mapping, and genomic structure of an X-linked gene for a subunit of human mitochondrial complex I. Genomics 1996;37:281–288.
- Wittig I, Augustein P, Brown GK, et al. Sequence variations in the NDUFA1 gene encoding a subunit of complex I of the respiratory chain. J Inherit Metab Dis 2001:24:15-27.
- Horvath S, Laird NM, Knapp M. The transmission/disequilibrium test and parental-genotype reconstruction for X-chromosomal markers. Am J Hum Genet 2000;66:1161-1167.

# **Neuro** *Images*



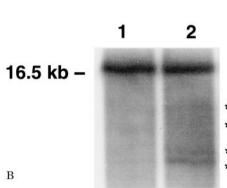


Figure. (A) T2-weighted brain MRI scan. Increased signal involving the white matter. (B) Mitochondrial DNA analysis. Hybridization pattern of Pvu II-digested total DNA from a control (lane 1) and from the patient (lane 2). DNA was extracted from muscle. Asterisks indicate deleted molecules.

## MNGIE: Diarrhea and leukoencephalopathy

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A 47-year-old man had muscular atrophy, cachexia, and chronic diarrhea since age 12. At 33, he presented progressive hearing loss, ophthalmoplegia, and bilateral ptosis. Extended leukoencephalopathy was seen on MRI (figure, A). Muscle biopsy found ragged-red fibers on Gomoritrichrome, staining with cytochrome c oxydase negative fibers, and defect in complexes I and IV on mitochondrial respiratory chain analysis. Southern blot analysis revealed multiple mtDNA deletions and a depletion in muscle (see figure, B). Leukocytes thymidine phosphorylase activity was undetectable. Compound heterozygous mutations (missense mutation in exon 3 (Glu87asp) and single nucleotide deletion in exon 6 (del C2799)) were found in the gene encoding thymidine phosphorylase. Diagnosis of myoneuronal-gastrointestinal encephalopathy (MNGIE) was retained.1,2

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- 1. Nishino I, Spinazzola A, Papadimitriou A, et al. Mitochondrial neurogastrointestinal encephalomyopathy; an autosomal recessive disorder due to thymidine phosphorylase mutations. Ann Neurol 2000;47:792-800.
- Nishino I, Spinazzola A, Hirano M, et al. MNGIE: from nuclear DNA to mitochondrial DNA. Neuromuscl Disord 2001;11:7-10.



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