

HEREDO-DEGENERATIVE DISEASES

MARINESCO-SJOGREN SYNDROME AND SIL1 MUTATIONS

Investigators from Aachen University, Germany, and multiple centers in Europe, UK, USA, Turkey and Argentina, report the results of SIL1 mutation analysis in 62 patients presenting with early-onset ataxia, cataracts and myopathy, the characteristic Marinesco-Sjogren syndrome triad. The mutation detection rate was 60% (15/25) among patients with the characteristic triad and <3% (1/37) in the group with more variable phenotypic presentation. Sixteen unrelated families had a total of 19 different SIL1 mutations. SIL1 mutations are invariably associated with a combination of cerebellar ataxia and chronic myopathy. Cataracts were sometimes absent in infants but were observed in all patients beyond the age of 7 years. Six patients with SIL1 mutations had no intellectual disability, and most patients had somatic growth retardation, skeletal abnormalities and pyramidal tract signs. SIL1 is the major Marinesco-Sjogren gene and the data collected broaden the SIL1 mutation spectrum. (Krieger M, Roos A, Stendel C, et al. SIL1 mutations and clinical spectrum in patients with Marinesco-Sjogren syndrome. **Brain** 2013 Dec;136(Pt 12):3634-44).

COMMENTARY. The alternative term for Marinesco-Sjogren syndrome is “hereditary oligophrenic cerebello-lental degeneration.” Organs involved are the cerebellum, eye lens, and muscles. Diagnostic characteristics are cerebellar ataxia, MRI evidence of cerebellar vermis atrophy, cataracts, mental retardation, and progressive myopathy. Associated abnormalities are small stature, brittle fingernails, sparse hair, dysarthria, hypergonadotropic hypogonadism, and scoliosis [1][2].

References.

1. Senderek J, et al. *Nat Genet.* 2005 Dec;37(12):1312-4.
2. Millichap JG. *Neurological Syndromes.* New York: Springer; 2013:279.

NEUROIMAGING FEATURES OF TYPE II ALEXANDER DISEASE

Investigators from Mayo Clinic, Rochester, MN, retrospectively identified 13 patients with type II Alexander disease (AxD) evaluated from Jan 1996 to Feb 2012. Median age at onset was 38 years (range 12-63); 5 were female. Neuroimaging data showed that 11 patients had atrophy of the medulla, all 13 had medullary T2 hyperintensity, 5 had T2 signal changes in the middle cerebellar peduncle, and 11 had pial FLAIR signal change in the medulla. Spinal cord imaging in 12 patients showed cord atrophy in 9, and 3 had cervical cord enhancement. Eight subjects had *tadpole atrophy* (atrophy of the medulla and cervical spinal cord with relative sparing of the pons). Three patients had thalamic or basal ganglia signal abnormality. Three patients had garland-like feature along the ventricular wall (ependymal nodularity), but to a lesser degree than that reported in infantile AxD. Compared with infantile or type 1 AxD, involvement of the periventricular white matter was sparse. Eight patients had mutations in the GFAP gene. Ten patients had a positive family history of probable AxD. Biopsy of the middle cerebellar peduncle in 1 patient demonstrated excessive Rosenthal fiber deposition in

gray and white matter, consistent with a diagnosis of AxD. An autopsy on patient 2 showed severe atrophy of medulla and spinal cord with Rosenthal fiber deposition. (Graff-Radford J, Schwartz K, Gavrilova RH, et al. Neuroimaging and clinical features in type II (late-onset) Alexander disease. **Neurology** 2014 Jan 7;82(1):49-56).

COMMENTARY. Alexander disease is characterized as infantile, juvenile, and adult forms or as type I with early-onset or type II of late-onset. MRI features of infantile type I consist of frontal white matter changes, a periventricular rim, and signal abnormality involving the basal ganglia, thalamus, and brainstem. The imaging features of type II late-onset AxD are different from those of type I and show predominant brainstem involvement with significant atrophy of the medulla, middle cerebellar peduncle, and spinal cord. The differential diagnosis of involvement of the middle cerebellar peduncle include AxD type II, spinocerebellar ataxia, Wilson disease, liver cirrhosis, adrenoleukodystrophy, and neoplasm. Palatal tremor (palatal myoclonus) is suggestive of late-onset AxD [1] but was rare in the Mayo Clinic series.

References.

1. Schwankhaus JD, et al. *Neurology*. 1995 Dec;45(12):2266-71.

SLEEP DISORDERS

EVOLUTION OF CHILDHOOD NARCOLEPSY AND CATAPLEXY

Investigators at University of Bologna and other centers in Italy, Finland, USA, and UK, performed clinical, polysomnographic, and cataplexy-video assessments at diagnosis (mean age of 10 +/- 3 years) and after a median follow-up of 3 years. At diagnosis children with narcolepsy with cataplexy showed an increase of sleep time during the 24 h; at follow-up, sleep time and nocturnal sleep latency shortened. Hypotonic phenomena decreased over time and were age dependent. At onset, childhood narcolepsy with cataplexy is characterized by abrupt increase of total sleep over the 24h, generalized hypotonia and motor overactivity, and hypocretin 1 deficiency. With time, cataplexy evolves into classic presentation (brief muscle weakness episodes triggered by emotions), whereas total sleep time across 24h decreases, returning to more age-appropriate levels. (Pizza F, Franceschini C, et al. Clinical and polysomnographic course of childhood narcolepsy with cataplexy. **Brain** 2013 Dec;136(Pt 12):3787-95).

COMMENTARY. Narcolepsy with cataplexy is characterized by abrupt onset and sudden weight gain that partially remits over time. Childhood onset narcolepsy/cataplexy is more than just a sleep disorder [1]. It is reported in 3 cases in association with paraspinal neuroblastoma [2], and is linked to H1N1 vaccination [3].

References.

1. Kotagal S, Kumar S. *Sleep*. 2013 Feb 1;36(2):161-2.
2. Sinsico C, et al. *Pediatr Neurol*. 2013 Jul;49(1):64-7.
3. Thebault S, et al. *Curr Opin Pulm Med*. 2013 Nov;19(6):587-93.