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# A case of young-onset dementia with confluent white matter changes: adult-onset autosomal dominant leukodystrophy due to chromosome 5q23

Autosomal dominant adult-onset leukodystrophy (ADLD) is an adult-onset leukodystrophy characterized by autonomic dysregulation, pyramidal signs, and cerebellar dysfunction (Meijer et al., 2008). Although neurological features of symmetrical primary CNS demyelination have been described, no authors have studied its neurocognitive presentation yet. We report the case of a 55 year-old male with a novel duplication on chromosomal band 5q23.2 who presented with progressive cognitive changes leading to dementia. Neuropsychological examination revealed significant deficits in complex attention, executive (abstract thinking, constructional skills, verbal fluency) and learning abilities with relative preservation of language and visuospatial functions. Cueing significantly improved memory recall. MRI FLAIR showed severe and confluent white matter abnormalities, more pronounced in the posterior areas, but no significant cortical atrophy. Cervical spinal cord was severely atrophied. High angular resolution diffusion imaging (HARDI) indicated chaotic fiber tracts with limited organization of large bundle fibers, and a shorter corticospinal tract. Altogether, we found significant cognitive changes associated with ADLD. They particularly affect frontal-subcortical pathways and give rise to a moderate-severe dysexecutive syndrome. ADLD should be considered in the complex differential diagnosis of combined white matter changes and progressive cognitive decline in adults along with vascular dementia, Krabbe disease, adult polyglucosan body disease, metachromatic leukodystrophy, fragile X–associated tremor/ataxia syndrome, Fabry disease, cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL), mitochondrial encephalopathy with lactic acidosis and stroke-like episodes (MELAS), vitamin B12 deficiency, cerebrotendinous xanthomatosis and adult-onset leukoencephalopathy with axonal spheroids and pigmented glia.