Atypical Psychiatric Features in Sporadic Creutzfeldt-Jacob Disease: A Diagnostic Challenge

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Abstract
Creutzfeldt-Jacob disease is a rare and fatal prion disease comprised of four variants: familial, sporadic, variant, and iatrogenic. Classic presenting symptoms include a rapidly progressive dementia, myoclonus, and ataxia. Misdiagnosis often occurs due to the neuropsychiatric phenotypic variability of CJD. Psychiatric manifestations across all four types of CJD are now increasingly being recognized, leading to earlier detection. We present a case of sporadic Creutzfeldt-Jacob disease with atypical psychiatric features and sparing of motor symptoms six months after initial clinical presentation.

INTRODUCTION
CJD is a rare, transmissible spongiform encephalopathy with a fatal neuropsychiatric course and comprised of four distinct types: variant CJD; vCJD: variant CJD; SLUMS: St. Louis University Mental Status; MMSE: Mini-Mental State Exam; CSF: Cerebrospinal Fluid; EEG: Electroencephalogram; MRI: Magnetic Resonance Imaging; NAA: N-Acetyl Aspartate; FLAIR: Fluid-Attenuated Inversion Recovery

Atypical Psychiatric Features

A 60 year-old healthy male presented to our institution for a second opinion evaluation for a progressive six month history of short-term memory loss, inattentiveness, and jocular affect. At this time, he required full-time supervision by family members for his "child-like" behavior. His past medical, surgical, and family history were unremarkable, but the patient did have a history of travel to Brazil and El Salvador in the months prior to symptom onset.

Neurologic examination demonstrated severe cognitive impairment, with lack of insight, marked inattentiveness, tangential speech, and an inappropriate, euphoric affect. His SLUMS (Saint Louis University Mental Status Examination) score was 7 points out of a possible 30 and MMSE score was 16 points out of 30, with most notable impairments in tasks of working memory and attention. Aside from hyperphagia, the remainder of his neurologic exam was unremarkable, without signs of startle reflex, gait ataxia, myoclonus or other abnormal limb movements.

He had received an extensive battery of tests during his first evaluation at two other institutions, including 2 lumbar punctures, both demonstrating only a mild protein elevation (56 mg/dL and 58.6 mg/dL) but otherwise normal cell count and culture. CSF tau protein was elevated at 2682 pg/ml and 14-3-3 immunoassay was inconclusive. Infectious, inflammatory, autoimmune, and paraneoplastic serum and CSF studies were normal. A 48-hour prolonged EEG did not detect periodic sharp and slow wave complexes. MRI brain with and without gadolinium demonstrated hyperintense T2 and signal abnormality in FLAIR (fluid-attenuated inversion recovery) with corresponding restricted diffusion in a cortical ribboning pattern in the bilateral medial frontal, bilateral temporal, right insular, and right parietal regions without contrast enhancement. MR spectroscopy demonstrated normal ratios of NAA/Choline and NAA/Creatine without lactate or lipid peak (Figure 1).

A third lumbar puncture was performed at our institution which resulted in similar CSF studies except now the 14-3-3 assay was positive and a higher elevated tau protein was reported (6925 pg/ml). Retesting for autoimmune and paraneoplastic

ABBREVIATIONS
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Keywords
- Creutzfeldt-Jacob disease
- Sporadic
- Psychiatric
- Prion
- 14:3:3 assay

etologies were normal.

DISCUSSION

CJD proves to be a challenging diagnosis given the phenotypic variability of the disease as demonstrated in our patient. Without any history of iatrogenic exposure to prions or known family history, sCJD remains the most likely etiology in our patient. Lack of cerebellar signs, myoclonus, and akinetic mutism distinguish this case of sCJD from others [6]. While his cognitive decline and psychiatric symptoms were striking, his motor and coordination function remained intact at six months from symptom onset. Gait disturbances have been shown to present in the majority of patients in the first one-third of their disease duration, but our patient demonstrated normal gait and stance [6].

Early psychiatric symptoms are common in vCJD and only more recently recognized as part of the sCJD spectrum [3]. The more commonly recognized psychiatric features of vCJD are depression, anhedonia, insomnia, psychosis, irritability, and anxiety [1]. sCJD is reported to present with delusions, paranoia, sleep disturbances, hallucinations, depression, and agitation, all of which were absent in this case [1]. Our patient's atypical psychiatric symptoms and cognitive impairments exemplify the variability of the disease, as his distractibility, godness, loss of insight, and impaired social conduct may have easily been misdiagnosed as frontotemporal dementia [7]. He also demonstrated elements of echolalia and proclivity towards rhyming and puns, akin to Witzelsücht disorder [8].

CJD is a fatal and progressive neurodegenerative disease often misdiagnosed as a non-specific psychiatric disorder early in the disease course if presenting symptoms lack neurologic findings. Because symptom heterogeneity of neuropsychiatric presentation make the diagnosis of sCJD problematic, repeated diagnostic investigations are crucial. Neuropathologic diagnosis remains the gold standard, but early diagnosis with implementation of psychosocial care and initiating the appropriate anxiolytics, anti-depressants, or psychotropics can ease the disease course for both patients and caregivers.

REFERENCES