A CASE OF SPORADIC CREUTZFELDT-JAKOB DISEASE

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ABSTRACT

Sporadic Creutzfeldt-Jakob disease (CJD) is a very rare and fatal disease caused by prions – proteins with unique characteristics and infective potential. The typical clinical presentation is of a rapidly progressive dementia with myoclonus, cerebellar, pyramidal, extra pyramidal and visual signs. The definitive diagnosis is histological, but in the context of suggestive symptoms, EEG, MRI and 14-3-3 protein in the CSF can be very helpful. We present the case of a 47 year old female patient with rapid onset cognitive decline and myoclonus of the right arm, along with typical paraclinical findings.

Key words: sporadic Creutzfeldt-Jakob disease, rapidly progressive dementia, prion diseases

BACKGROUND

In contrast with more common dementing conditions that typically develop over years, rapidly progressive dementias can develop subacutely over months or weeks and usually bear a grim prognosis. It is important to bear in mind that there are curable causes for this syndrome, and thus an accurate differential diagnosis is essential. The causes for rapidly progressive dementia (RPD) can be classified as prionic and nonprionic. In a case series of 178 referrals with RPD, 62% were prionic (6).

There are three major categories of Creutzfeldt-Jakob Disease (CJD) – sporadic, genetic and acquired.Sporadic CJD is idiopathic.In genetic CJD, there is a family history of the disease and/or tests positive for a genetic mutation associated with CJD (a mutation in the protein gene PRNP). Acquired CJD is transmitted either by medical exposure to contaminated nervous system tissues or blood products (iatrogenic CJD), or by consuming contaminated animal meat (variant CJD).

CLINCAL CASE

We present the case of a 47 year old female patient who presentedwith rapid onset dementia and rhythmic myoclonus of the right arm.

History: No significant previous medical history apart from psoriasis. No significant family history, in particular, no history of early dementia.

Presenting complaints: Two months previous to hospital presentation, the patient started complaining of unspecific symptoms – dizziness, fatigue, mild headache. She saw her general practitioner who prescribed betahistine and gingko biloba. This treatment did not help with her symptoms, furthermore, she gradually developed cognitive impairment, social withdrawal, lack of initiative, difficulty coping with routine daily activities. Two weeks before presentation, her family noticed rhythmic involuntary movements involving her right arm.

Neurological examination on presentation: alert, global aphasia (does not obey simple com-

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mands, virtually no speech output), rhythmic myoclonus of the right arm, no cranial nerve signs, no motor/sensory/coordination deficit, tendinous reflexes symmetrically brisk, bilateral flexor plantar response. Further neuropsychological testing was impossible in the context of severe dysphasia.

General physical examination: BP = 135/80 mmHg, HR = 76 bpm, cardiovascular and respiratory examination – unremarkable, small psoriatic plaques on the elbows bilaterally.

Laboratory investigations: full blood count, urea and creatinine panel, C reactive protein, ESR,blood glucose, liver function tests – normal. Thyroid function tests – TSH, FT3, FT4, anti-thyroglobulin antibodies, anti-thyroid peroxidaseantibodies – normal. HIV screening – negative, VDRL – negative.Vasculitis screen (ANA, ANCA, dsDNA antibodies, rheumatoid factor) – negative.

EEG – Pattern of periodic sharp waves with a frequency of 1,5 c/sec, predominately in the left hemisphere (Fig. 1)

Brain MRI– There is DWI hyperintesity of the left frontal, parietal, insular and occipital cortex, and to a much lesser extent in the right insular, frontal and occipital cortex.No pathological uptake of contrast is observed (Fig. 2, 3 and 4)

CSF–0 WBC, 0 RBC, proteins-0,46 mg/dl, glucose 78 mg/dl; Protein 14-3-3 – positive

An empirical trial with IV methylprednisolone therapy failed to show any clinical benefit. At a follow-up visit after 4 weeks, the patient's clinical status had progressed to akineticmutism. A diagnosis of probable sporadic Creutzfeld-Jakob disease was made based on the 2010 CDC diagnostic criteria (Fig. 5). The family informed us that the patient passed away three and a half months after diagnosis. They did not agree to a post-mortem study.

DISCUSSION

Although the differential diagnosis of rapidly progressive dementia is fairly wide – see Table 1 – diffusion weighted imaging on MRI has become an indispensable tool for differentiating sporadic prion disease from other conditions. In this clinical context, with very few exceptions, virtually no other

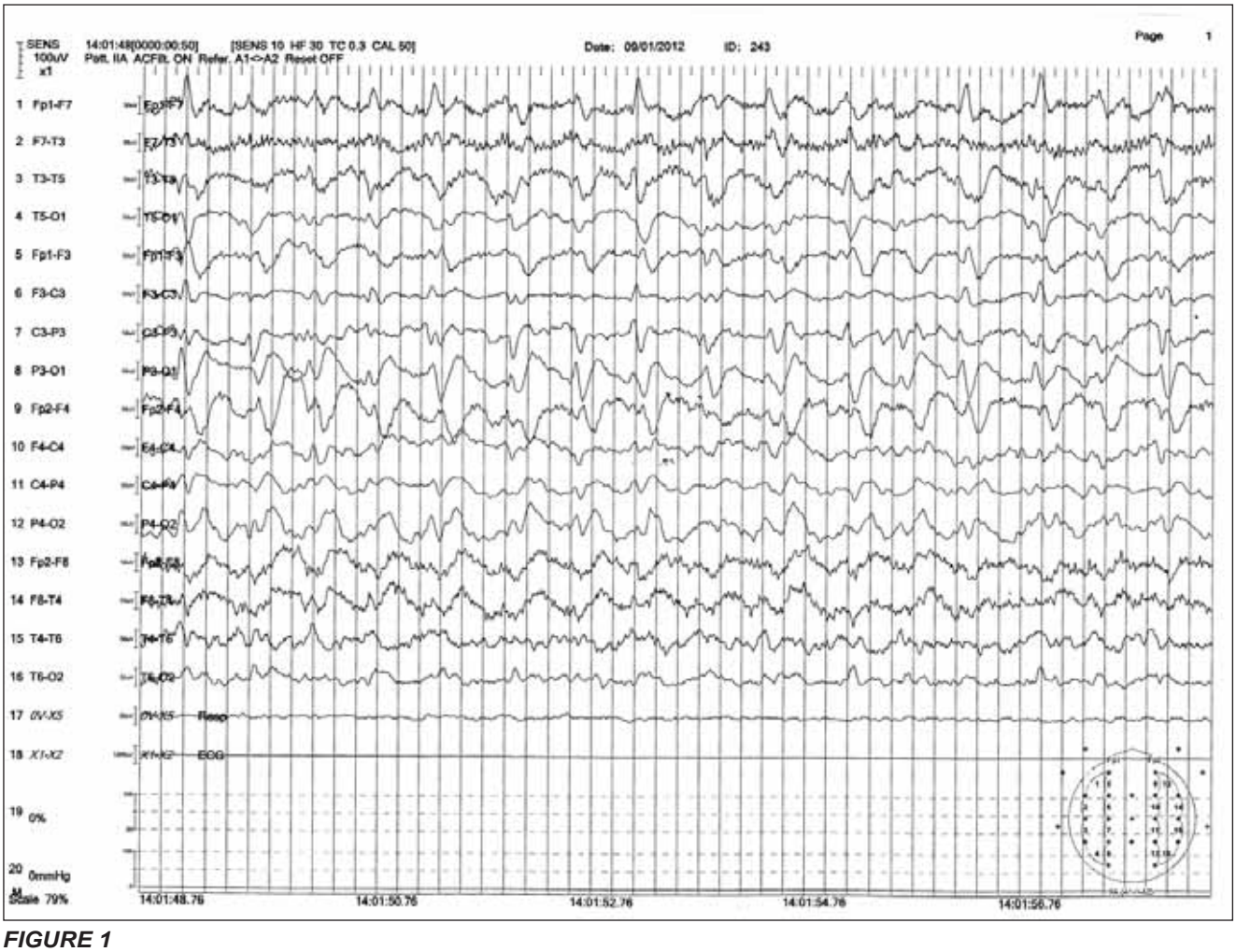


FIGURE 1

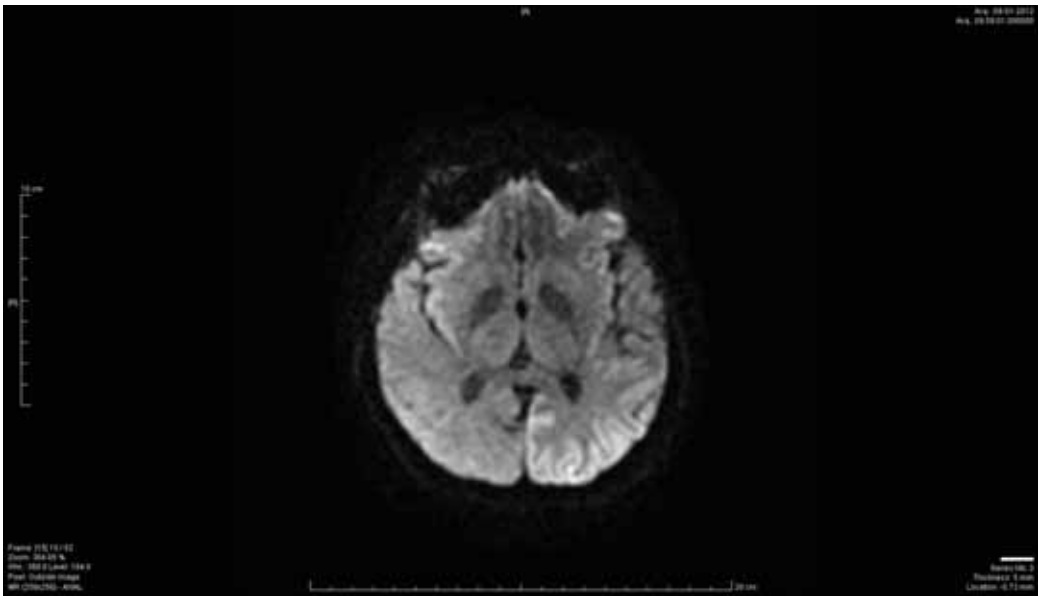
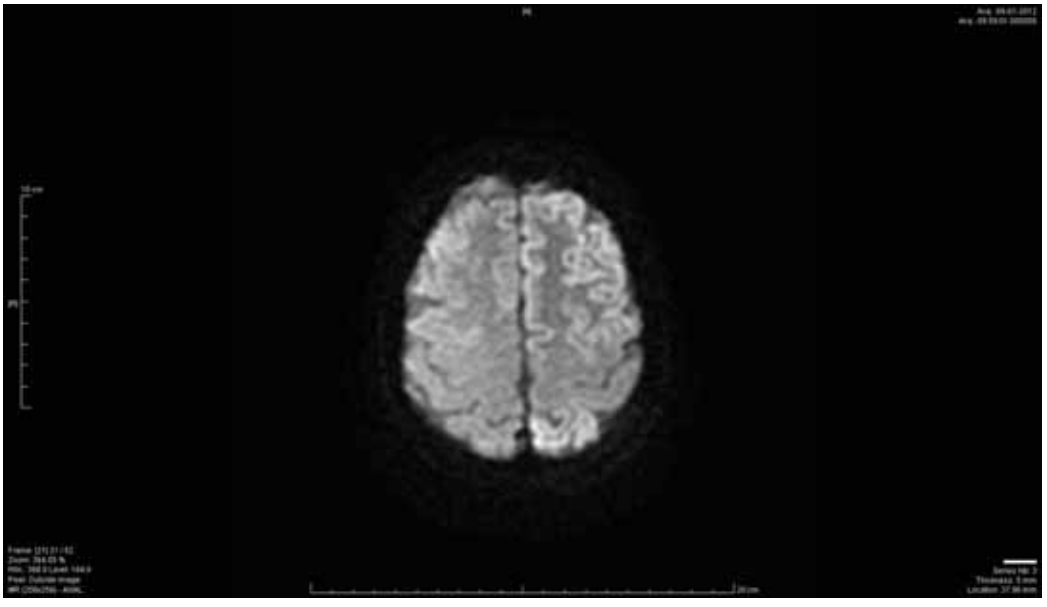


FIGURE 2



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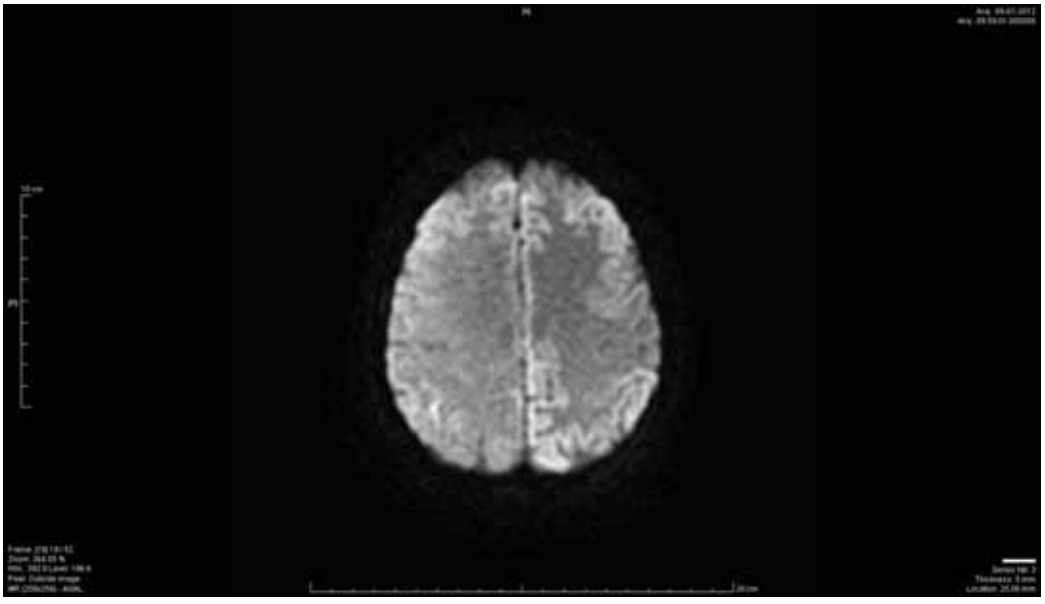

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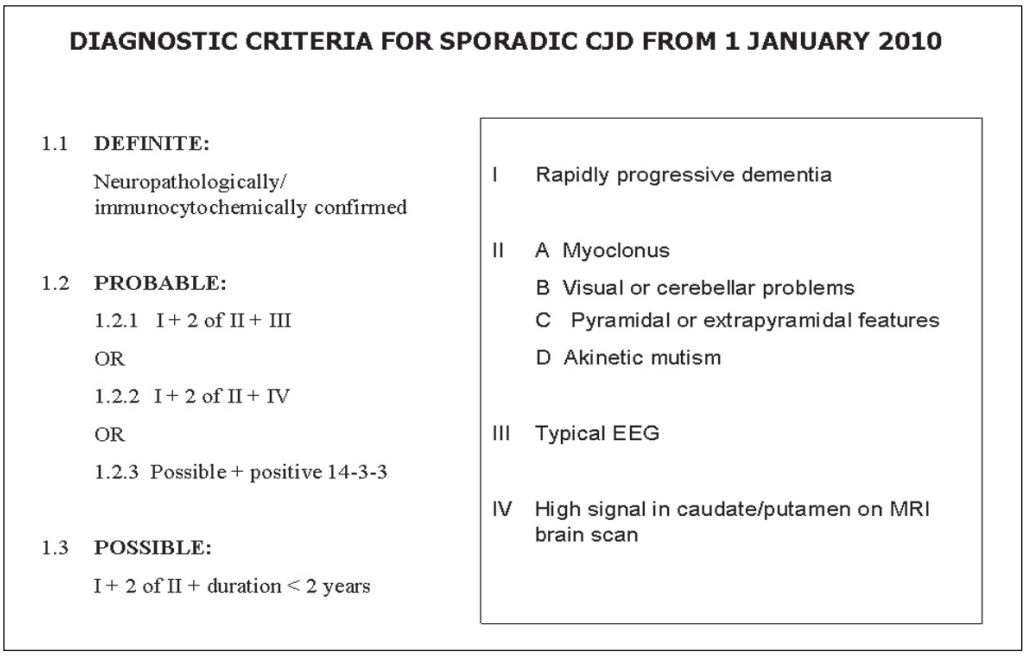

FIGURE 5

disease can mimic the same pattern of cortical and anterior basal ganglia involvement (6).

TABLE 1. *Differential diagnosis of rapidly progressive dementia*

Neurodegenerative	Corticobasal degeneration
	Fronto-temporal dementia
	Dementia with Lewy bodies
	Alzheimer's disease
	Progressive supranuclear palsy
Autoimmune	Hashimoto encephalopathy
	Sarcoid
Antibody mediated	Voltage gated potassium channels
	Yo and Hu, Ma, CV2, GAD65, Neuropil, Adenylate kinase 5, Glial
Infectious	HIV, Syphilis Lyme disease PML HSV/CMV/EBV/West Nile virus Mycobateria Whipple disease
Malignancy	Paraneoplastic encephalitis
	Primary CNS lymphoma
	Glomatosiscerebri
Toxic/Metabolic	Ethanol, heavy metal intoxication Drug toxicity Porphyria
Psychiatric	

This case exhibits most of the typical features of sporadic CJD. The clinical presentation was of rapid cognitive decline with pyramidal signs and involuntary movements followed by progression to akinetic-mutism within a month from diagnosis. The EEG pattern of periodic sharp wav es in this clinical context is thought to be pathognomonic. The 14-3-3 protein in the CSF although not very specific, is useful if interpreted with the appropriate symptoms.

More recently, when diffusion weighted imaging became widely available, diagnostic criteria have incorporated the use of MRI in the diagnosis of sCJD. Although conventional T2 and FLAIR images are usually not very helpful, DWI hyperintensities in the putamen, caudate and cortex were shown to h ave a high specificity for sporadic prion disease. In the WHO and CDC criteria, MRI changes include caudate and putamen FLAIR/DWI hyperintensity. However, in the last few years, there are numerous case series that mention "cortical ribboning" – isolated DWI hyperintensity of the cortex (1)(2)(4).

This case report details a typical clinical presentation for this rare and fatal disease, along with all the essential paraclinicalelements required for diagnosis.

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