Suspected cervical myelopathy: an unexpected diagnosis

Introduction

Myelopathy diagnosed on the basis of (so-called) pyramidal signs has a very broad differential diagnosis, including compressive structural lesions, inflammatory and metabolic disorders. Concurrent symptomatology, investigation findings and disease progression may sometimes help to narrow the differential diagnosis (Jacob and Larner, 2017). This article reports a patient who presented with symptoms and upper motor neurone signs (limb spasticity, hyperreflexia) which prompted an initial working diagnosis of cervical myelopathy and referral for surgical opinion, but whose disease progression and investigation disclosed an unexpected diagnosis.

Discussion

Classical presentations of sporadic Creutzfeldt–Jakob disease include those with cerebellar dysfunction (so-called Brownell–Oppenheimer variant) or visual symptoms (Heidenhain variant). However, 'unusual features' are well recognized in sporadic Creutzfeldt–Jakob disease, for example causing diagnostic confusion with progressive aphasia (Jacquin et al, 2014), dementia with Lewy bodies (du Plessis and Larner, 2008), and even stroke (Ghadiri-Sani et al, 2015). The application of internationally agreed World Health Organization diagnostic criteria for Creutzfeldt–Jakob disease may be helpful in establishing the diagnosis, although this may not be the case in some unusual (e.g. psychiatric) presentations which fall outside the current criteria (Ali et al, 2013).

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Pyramidal features are a recognized clinical feature of sporadic Creutzfeldt–Jakob disease, and are incorporated in World Health Organization criteria. Reviewing the clinical course of 455 patients with sporadic Creutzfeldt–Jakob disease, Nakatani et al (2016) found that the mean time to develop pyramidal features was 0.56 months from disease onset. However, presentation of sporadic Creutzfeldt–Jakob disease with isolated pyramidal features, as reported in the current case, is rare. There have been occasional reports of spastic paraparesis or isolated spasticity. Geevasinga et al (2013) reported a 55-year-old woman who presented with progressive gait disturbance with spastic paraparesis, present for some months before cognitive decline and ataxia developed, with neuropathological confirmation of sporadic Creutzfeldt–Jakob disease. Spastic paraparesis has also been reported as a presenting feature in familial Creutzfeldt–Jakob disease (Conte et al, 2015). Marek et al (2013) reported a patient who presented

CASE REPORT

A previously healthy 57-year-old right-handed woman presented with a 1-month history of sensory disturbance in her left (non-dominant) arm and pain in the neck radiating to the left arm. She had some difficulty walking, feeling off balance, but there was no disturbance of sphincter function. Neurological examination performed at her local hospital noted increased tone and hyperreflexia in all limbs but with preserved power; plantar responses were deemed equivocal. Sensory examination found patchy, non-dermatomal, sensory impairment in the left arm. Based on the symptoms and the finding of upper motor neurone signs, a clinical diagnosis of cervical myelopathy was made, with possibly some radiculopathic features in the left arm. Magnetic resonance imaging of the cervical spine showed no evidence of cord compression or intraparenchymal signal change, but was reported to show some impingement on nerve roots at C5–C7, prompting referral for a surgical opinion.

Pending this appointment, the patient's condition deteriorated rapidly. Within 2 weeks she was admitted to the local hospital with progressively worsening mobility, weakness affecting the left arm and leg, difficulty eating and drinking, impaired speech with a tendency to repetition and getting her words mixed up, and urinary and faecal incontinence. Magnetic resonance imaging of the brain was unremarkable on standard sequences. Because of the rapid neurological deterioration she was transferred to the regional neuroscience centre.

She was unable to give any history or undertake cognitive screening instruments. From collateral sources there was no apparent family history of similar disorder, and no prior exposure to surgical procedures. In addition to the previously observed limb hypertonicity and hyperreflexia, there was now dystonic posturing of the left arm with occasional involuntary jerky movements, interpreted as myoclonus. Plantar responses were extensor. Repeat magnetic resonance brain imaging included diffusion-weighted sequences which showed restricted diffusion in the right frontal cortical region. Electroencephalography showed an encephalopathic picture (theta range with slower delta rhythms) but neither epileptiform changes nor periodic slow wave complexes were seen. CSF showed normal cell count and glucose level with a mildly elevated protein level (0.61 g/litre, normal 0.15–0.45 g/litre).

In light of her rapid clinical deterioration (cognitive impairment and myoclonus) and the investigation findings (restricted cortical diffusion on magnetic resonance brain imaging, encephalopathic electroencephalography), a diagnosis of Creutzfeldt–Jakob disease was suspected. CSF subsequently proved positive for 14-3-3 protein and S100b was elevated (1.10 ng/ml, normal <0.41 ng/ml). Prion protein gene showed no mutations, with methionine homozygosity at codon 129.

The patient continued to deteriorate, dying within a month of admission to the neurosciences unit. Permission for post-mortem examination was not granted. Applying World Health Organization clinical diagnostic criteria, the combination of clinical and investigation findings was consistent with a diagnosis of probable sporadic Creutzfeldt–Jakob disease.

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with a spastic monoparesis affecting one arm over a period of 6 months whose initial investigations prompted a diagnosis of focal-onset motor neurone disease, but who then rapidly progressed to ataxia and death, with postmortem neuropathology confirming sporadic Creutzfeldt–Jakob disease.

Pathological evidence of pyramidal tract degeneration has been reported in sporadic Creutzfeldt–Jakob disease (Iwasaki et al, 2007), associated with severe cerebral neocortical involvement with white matter degeneration. Pyramidal tract lesions showed loss of myelin and axons with macrophage infiltration and fibrillary gliosis, consistent with tract degeneration secondary to neocortical involvement. However, some cases showed a distal-dominant pathology suggestive of retrograde degeneration or 'dying back' of the pyramidal tract.

Prion diseases are multifocal disorders which may affect various cortical pathways, including pyramidal, extrapyramidal, cerebellar and basal ganglia tracts. The authors suggest that on rare occasions they may present with signs suggestive of a myelopathy, as a result of pyramidal tract degeneration, presumably a consequence of cerebral neocortical involvement with white matter degeneration. Marek et al (2013) speculated that their patient had a 'spinal onset' type of sporadic Creutzfeldt–Jakob disease, but systematic studies of spinal cord pathology in sporadic Creutzfeldt–Jakob disease are, to the authors' knowledge, lacking. **BJHM**

LEARNING POINTS

- Sporadic Creutzfeldt–Jakob disease may on occasion present with symptoms and signs suggestive of a myelopathy.
- Early diagnosis of Creutzfeldt–Jakob disease is often difficult, in part because of the frequency of unusual variants, with ramifications for early intervention.
- The diagnosis of Creutzfeldt–Jakob disease may need to be considered, even if a remote possibility, for example in patients with suspected cervical myelopathy when neuroimaging fails to disclose a diagnosis.

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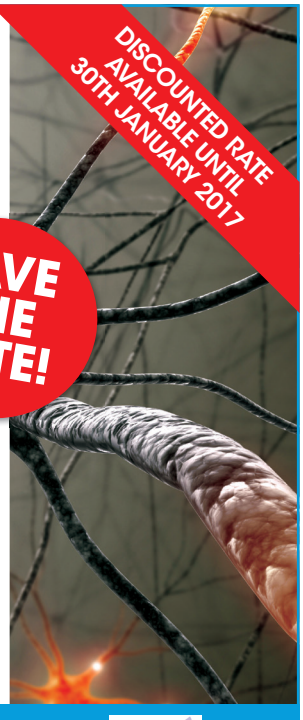

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