

# Acute Amnesia in MS Revisited

**AJ Larner, CA Young**

Walton Centre for Neurology and Neurosurgery, Liverpool, UK

## Summary

Although cognitive problems in multiple sclerosis (MS) are increasingly recognized, acute amnesia in MS appears to be very rare. Hence, this presentation should always prompt consideration of other diagnoses. Nonetheless, as

illustrated by the following case report, acute onset of demyelinating disease with the clinical phenotype of amnesia may on occasion be the presenting feature of MS.

### KEY WORDS:

MULTIPLE SCLEROSIS; AMNESIA; COGNITIVE IMPAIRMENT

## Introduction

Cognitive problems are increasingly recognized as part of the phenotype in many patients with multiple sclerosis (MS).<sup>1,2</sup> Testing of cognitive, as well as motor and sensory, function in MS is increasingly recommended.<sup>3</sup> A subcortical, 'white matter', dementia often develops with disease progression,<sup>4</sup> and a dementia of early onset may be encountered with aggressive demyelinating disease.<sup>5</sup> However, an amnesic syndrome, usually considered to reflect cortical involvement, is rarely reported. Here we present a case in which amnesia was both an early and prominent feature of relapsing-remitting MS.

## Case Presentation

Neurology consultation was requested on a 44-year-old mature student 7 days after she was admitted to a district general hospital with three tonic-clonic seizures. She was unable to give any account of her hospital admission. Retrospective collateral history suggested that she had previously been in good general health, with no history of seizure disorder, but had complained of poor concentration for about 4 months prior to admission which had affected her degree work. Neurological examination showed no focal abnormalities.

Computed tomography brain imaging on admission showed large bilateral areas of low-density change in parietal and temporal periventricular white matter without mass effect or

post-contrast enhancement, changes which were confirmed on magnetic resonance (MR) brain imaging (without contrast). The appearances were thought suggestive of a demyelinating process. Cerebrospinal fluid (CSF) analysis showed normal cell count and glucose but slightly elevated protein (0.62 g/l, normal range 0–0.4 g/l). The differential diagnosis was felt to lie between herpes simplex encephalitis, although MR appearances were not deemed typical, and acute disseminated encephalomyelitis (ADEM). The patient was initially treated with aciclovir, but polymerase chain reaction for herpes simplex virus proved negative. CSF culture was negative; oligoclonal bands showed a type 3 pattern. Two weeks after acute admission she was alert and chatty, but complained of poor memory. On Mini-Mental State Examination (MMSE) she scored 22/30, losing marks for orientation in time (2/5) and recall (0/3) despite intact registration (see Table 1).

At follow-up 3 months later, her memory difficulties continued. She also reported new symptoms, an episode of right visual loss without eye pain beginning 2 months after her initial presentation. Visual acuity was 6/24 right with impaired colour vision (Ishihara plate 5/16). Further investigations included interval MR scan which showed unchanged appearances of the multiple confluent periventricular hyperintensities (Figure 1), which did not show

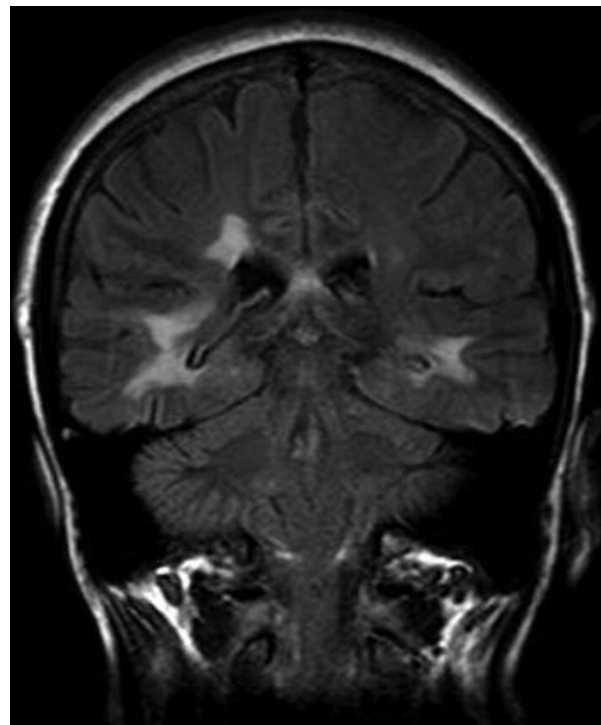
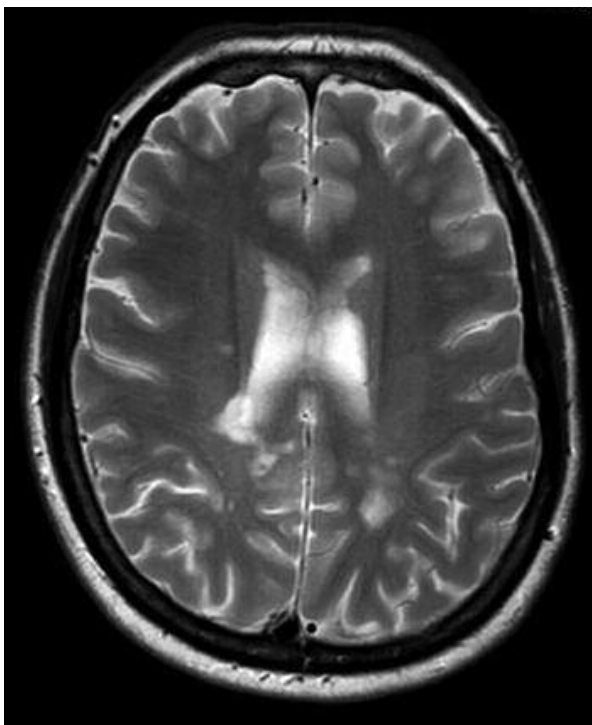
**Table 1: Time course of cognitive function**

Time	2 weeks	14 weeks	52 weeks
<b>MMSE</b>	<b>22/30</b>	<b>20/30</b>	<b>25/30</b>
Orientation in time	2/5	3/5	3/5
Orientation in place	4/5	2/5	5/5
Registration	3/3	3/3	3/3
Attention	5/5	3/5	5/5
Recall	0/3	1/3	0/3
Naming	2/2	2/2	2/2
Repetition	1/1	0/1	1/1
Close eyes	1/1	1/1	1/1
3-step	3/3	3/3	3/3
Sentence	1/1	1/1	1/1
Pentagons	0/1	1/1	1/1
<b>ACE-R</b>	<b>-</b>	<b>70/100</b>	<b>78/100</b>
Attention/orientation	-	11/18	16/18
Memory	-	12/26	13/26
Fluency	-	9/14	10/14
Language	-	23/26	23/26
Visuospatial	-	15/16	16/16

contrast enhancement; no cortical or basal ganglia lesions were seen. Visual evoked responses showed bilateral delay, greater on the right, suggesting optic neuropathy. Cognitive testing with the Addenbrooke's Cognitive Examination-Revised (ACE-R),<sup>6</sup> which

incorporates the MMSE, gave a score of 70/100 (MMSE 20/30), with ACE-R subscores indicating greatest impairment in memory, but with relative preservation in other cognitive domains (Table 1).

Because of uncertainty as to whether the diagnosis was ADEM or MS, further interval investigations were undertaken 9 months after the acute presentation; no new clinical events had occurred. MR brain imaging again showed periventricular white matter lesions, unchanged from previously; cervical cord imaging showed no intrinsic cord changes. CSF oligoclonal bands were positive with a type 2 pattern, consistent with MS. One year after initial presentation, she still had difficulty with short-term memory, forgetting people she had met only half an hour before and repeating questions and observations. Repeat testing with the ACE-R gave a score of 78/100, with memory still the weakest subscore (Table 1), with the recognition paradigm stronger than recall, suggesting a retrieval deficit. At follow-up 18 months after initial presentation, there had been no further clinical events, but she remained amnesic. She had not been commenced on disease-modifying therapies but was undergoing cognitive rehabilitation.



**Figure 1.** Axial T2-weighted (left) and coronal fluid-attenuated inversion recovery (right) MR brain images demonstrating periventricular white matter change

### Key Points

- Although cognitive problems are common in MS, acute amnesia is rare
- The differential diagnosis of acute onset of amnesia with white matter changes on MR brain imaging includes ADEM, cerebral vasculitis and CADASIL
- Acute amnesia may be a rare presenting feature of MS
- Definitive diagnosis may only become apparent with the passage of time

### Discussion

Prominent amnesia has been described in a cortical variant of MS, with or without aphasia, alexia and agraphia,<sup>7</sup> but acute presentation of MS with higher cognitive dysfunction is unusual.

Cases of aphasia<sup>8</sup> and occasionally of amnesia<sup>9</sup> have been reported, but other potential causes for these syndromes should always be considered in the differential diagnosis,<sup>10</sup> particularly ADEM and also cerebral vasculitis and cerebral autosomal dominant arteriopathy with subcortical infarcts and leucoencephalopathy. However, reports of long-term amnesia following ADEM have not been found.<sup>2</sup>

Previously suggested operational criteria for the diagnosis of ADEM may have shortcomings when used in the acute phase of illness.<sup>11</sup> Although atypical clinical features, such as seizures and cognitive decline, have been included in recently proposed criteria for the differentiation between MS and ADEM,<sup>12</sup> nonetheless our patient fell into the MS category ( $\leq 1$  criterion) when using these, since oligoclonal bands were present and there was no radiological evidence of grey-matter involvement. Hence the likelihood of ADEM is low in our patient.

In summary, early and prominent amnesia should not preclude a diagnosis of MS in the presence of other clinical, imaging and paraclinical features supportive of the diagnosis, although it may require the passage of time before a definite diagnosis can be established.

### Conflicts of Interest

No conflicts of interest were declared in relation to this article.

### Address for Correspondence

AJ Larner, Cognitive Function Clinic, Walton Centre for Neurology and Neurosurgery, Lower Lane, Fazakerley, Liverpool, L9 7LJ, UK  
 Phone: +44 (0) 151 529 5727  
 Fax: +44 (0) 151 529 8552  
 E-mail: a.larner@thewaltoncentre.nhs.uk

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