An unpaired *t* test was used to compare patient results with the data of 10 healthy age matched control subjects (mean age 35 (SD 17) years). Analysis of variance (ANOVA) for repeated measures was used to analyse the MARS effects on RMT, transcranial electrical stimulation, and AMT. If the effect of a given parameter was significant, data were further compared post hoc using Student's *t* test for paired samples.

Electrophysiological results are summarised in table 1. The RMT was significantly higher in the patients studied than in the control group (82.4 (SD 10)% *v* 51 (SD 8.4)%; *p* < 0.01) and decreased significantly after MARS (68.6 (SD 7)% *v* 82.4 (SD 10)%, *p* = 0.010). The AMT was higher in the three patients studied than in the control group (54.7 (SD 11)% *v* 41 (SD 4)%, *p* > 0.05) but the difference was not statistically significant probably because of the restricted number. In the patients the AMT was slightly decreased after the MARS procedure (50.7 (SD 5.5)% *v* 54.7 (SD 11)%, *p* > 0.05, paired *t* test). There was no difference between the CMCT and CSP and ICI of the studied patients and of controls. Active motor threshold to transcranial electrical stimulation was similar in the three studied patients and in the control group (20 (SD 5)% *v* 18 (SD 3)%, *p* > 0.05). In patient 3 we found normalisation of all the parameters evaluated after orthotopic liver transplantation.

We demonstrated hypoexcitability of the motor cortex (increased RMT) in patients with severe liver failure. As transcranial electrical stimulation was normal, this hypoexcitability originates at the cortical level.²⁻⁶ Cortical hypoexcitability found using transcranial magnetic stimulation could be explained by decreased glutamatergic excitatory neurotransmission and/or increased GABAergic inhibitory neurotransmission, previously reported in severe liver failure.¹ Transcranial magnetic stimulation study led us to interpret the hypoexcitability of the motor cortex in severe liver failure as resulting from underactivity of cortical glutamatergic excitatory circuits rather than increased GABAergic activity (normal CSP and ICI). Electrophysiological abnormalities in our patients were reversed by MARS treatment or by orthotopic liver transplantation. However, the few patients presented does not allow us to express any consideration about the clinical implication of MARS treatment on the outcome of patients with severe liver failure.

These preliminary findings suggest that transcranial magnetic stimulation may be a useful tool in assessing patients with severe liver failure.

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Amnesia for childhood in patients with unexplained neurological symptoms

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In a preliminary study, we tested the hypothesis that patients with medically unexplained symptoms attending the clinic of a general adult neurologist would have delayed earliest and continuous memories compared with patients whose symptoms were explained by neurological disease. Depression, adverse childhood experience, and low socioeconomic status have all been associated both with poor memory of childhood. Because these variables are also associated with medically unexplained symptoms we hypothesised that we would find a link between unexplained symptoms and impaired memories of childhood.

One hundred consecutive neurology outpatients were asked the question "What is the very first thing that you can remember?" and "How old were you at the time?". They were

then asked "From what age from could you produce your own life story, biography, or CV without help from a parent or relative?" and "Do you have blanks in your memory?". Neurological diagnoses were recorded and the patient completed the brief assessment scale for depression cards (BASDEC) scale for depression.¹ This simple self rated measure is scored out of 21. A score of 7 or more is taken as the threshold for depression.

Fifty five patients were diagnosed with neurological disease and 45 were diagnosed with unexplained neurological symptoms by a consultant neurologist (GE). The neurological

Abbreviations: BASDEC, brief assessment scale for depression cards

Table 1 Results in 100 consecutive neurology outpatients

	Neurological disease (n=55)	Unexplained neurological symptoms (n=45)	Significance
Age (median)	44	47	NS
Sex	28F:27M	36F:9M	Unpaired <i>t</i> test $p < 0.005$ Fisher's exact test
Reported age of earliest memory (y) (median)	4	5	NS
Reported age of onset of continuous memory (y) (median)	6	11	Mann-Whitney $p < 0.005$ Mann-Whitney
"Memory blanks?" (number of true responses)	3	17	$p < 0.0001$ Fisher's exact test
Number with BASDEC score ≥ 7 (threshold for depression)	13	23	$p < 0.01$ Fisher's exact test

diagnoses were epilepsy (12), multiple sclerosis (10), migraine (13), Parkinson's disease (four), cervical spondylosis (three), brain space occupying lesion (three), transient ischaemic attack (two), syncope (two), and one each of motor neuron disease, torticollis, benign positional vertigo, cerebellar degeneration, neuropathy, and drug toxicity. The presenting unexplained neurological symptoms were headache (18), dizziness/balance problems (eight), sensory symptoms (seven), pain (six), memory complaints (three), diplopia (one), weakness (one), and non-epileptic attacks (one).

The results are shown in table 1. There was no significant difference between the two groups when asked about their earliest memory although both groups reported ages that were somewhat later than the average age suggested in the literature. Patients with unexplained symptoms had significantly later onset of reported continuous memory ($p < 0.005$) and reported more memory blanks ($p < 0.001$). There were significantly more women in the unexplained group but the age differences were not significant.

Depression was more common in the unexplained group (51%) versus the explained group (24%), as might be expected ($p < 0.05$). Therefore could the effect on memory seen in the unexplained group be entirely due to depression? Although depression and unexplained symptoms overlap considerably, using a general linear model they were both independently related to continuous memory ($p < 0.05$). Neither the sex nor the age of the patients were significant in this model.

Research on earliest memories has placed their onset at between 3-4 years in healthy adults.² This age is thought to be increased by a wide range of variables including male sex, depression, adverse childhood experience, low verbal IQ, low socioeconomic status, ethnic factors, parental retelling of events, and the presence of siblings.³ Similar factors have been shown to influence autobiographical memory. In this study, although depression could be the determining factor, socioeconomic status, and IQ could plausibly have been unequally distributed in the two groups as well. The methods in this study were also relatively crude and unblinded. In particular, we did not attempt to validate the patient's reports using contextual cues or documented events. Both of these strategies could have reduced differences between the groups. The questions we asked, however, which were really a measure of perception of childhood memories, at least have the advantage of reflecting everyday neurological practice.

If depression and adverse childhood experience are key factors in determining early memories in patients with unexplained symptoms, what are the possible mechanisms? Some studies have suggested that patients with depression tend to have "overgeneral" recall of memories—that is, recall

of general events rather than detail of positive or negative events.⁴ This may bring forward the age they think that they can confidently remember their own history. Similar effects have been found in borderline personality disorder, post-traumatic stress disorder, and in some but not all adults who report abuse as a child.⁵ It has been suggested in these contexts that dissociation and repression may be mechanisms that help people avoid unpleasant memories.⁵ Alternatively, what we have found may simply reflect a perception of amnesia for childhood in patients with unexplained neurological symptoms rather than actual amnesia. Regardless of the mechanisms, associations between illness states and poor reported childhood memories may have clinical relevance. Inability to adequately remember positive events from childhood may be a maintaining factor in depression and thus a target for treatment. The same may be true in many patients with unexplained neurological symptoms.

This study suggests a difference in age of onset of reported autobiographical memory but not the age of reported earliest memory in patients with unexplained neurological symptoms. Further studies using standardised measures of recall may help to disentangle the relation between unexplained neurological symptoms, memory complaints, emotional disorder, and adverse childhood experience.

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