Epilepsy & Behavior 80 (2018) 221–228

Contents lists available at ScienceDirect

Epilepsy & Behavior

journal homepage: www.elsevier.com/locate/yebeh

Memory complaints in epilepsy: An examination of the role of mood and illness perceptions

Deborah Tinson [a,*], Christopher Crockford [b], Sara Gharooni [b], Helen Russell [b], Sophie Zoeller [b], Yvonne Leavy [a], Rachel Lloyd [a], Susan Duncan [a]

[a] Department of Clinical Neurology, Western General Hospital, Edinburgh EH42UX, UK
[b] Department of Human Cognitive Neuroscience, University of Edinburgh, Edinburgh EH89JZ, UK

ARTICLE INFO

Article history:
Received 7 November 2017
Accepted 22 November 2017
Available online xxxx

Keywords:
Epilepsy
Subjective memory impairment
Memory complaints
Mood
Illness perceptions

ABSTRACT

The study examined the role of mood and illness perceptions in explaining the variance in the memory complaints of patients with epilepsy.
Method: Forty-four patients from an outpatient tertiary care center and 43 volunteer controls completed a formal assessment of memory and a verbal fluency test, as well as validated self-report questionnaires on memory complaints, mood, and illness perceptions.
Results: In hierarchical multiple regression analyses, objective memory test performance and verbal fluency did not contribute significantly to the variance in memory complaints for either patients or controls. In patients, illness perceptions and mood were highly correlated. Illness perceptions correlated more highly with memory complaints than mood and were therefore added to the multiple regression analysis. This accounted for an additional 25% of the variance, after controlling for objective memory test performance and verbal fluency, and the model was significant (model B). In order to compare with other studies, mood was added to a second model, instead of illness perceptions. This accounted for an additional 24% of the variance, which was again significant (model C). In controls, low mood accounted for 11% of the variance in memory complaints (model C2).
Summary: A measure of illness perceptions was more highly correlated with the memory complaints of patients with epilepsy than with a measure of mood. In a hierarchical multiple regression model, illness perceptions accounted for 25% of the variance in memory complaints. Illness perceptions could provide useful information in a clinical investigation into the self-reported memory complaints of patients with epilepsy, alongside the assessment of mood and formal memory testing.

1. Introduction

Approximately 20–50% of people with epilepsy complain of memory problems [1]. Memory complaints have been related to poorer perceived quality of life [2], which in turn has been associated with higher healthcare utilization [3], highlighting its importance as an area of research. There are many possible causes of memory impairment in epilepsy including the following: seizure foci (memory may be impaired in patients with temporal lobe epilepsy (TLE) [4]), the effects of antiepileptic medication [5], and increases in the frequency of seizures [6] or interictal activity [7]. However, studies of the relationship between performance on objective memory tests and patients' complaints of poor memory have produced results which are inconsistent. Where correlations are found, these they may be low [8].

This inconsistency could, in part, be due to gaps in the research. For example, most of the studies which have found a significant relationship between subjective memory and results on formal memory testing have used samples of patients with TLE [9–12]. Small sample sizes mean that studies have not been able to compare these findings with those from other focal epilepsies, such as frontal lobe epilepsy, or with epilepsies such as idiopathic generalized epilepsy. Factors such as older age and being female are associated with more memory complaints in general population studies [13] with older age also related to more memory complaints in patients with epilepsy [14]. However, there is no evidence that these variables influence the association between memory complaints and objectively tested performance in patients with epilepsy [8].

Another cause of inconsistent findings could be that lay concepts of memory may differ from those of professionals. Two studies [9,15] found that memory complaints in patients with TLE were more highly correlated with scores on verbal fluency tests than with formal memory measures. Another study found that, in patients with focal epilepsies, a measure of processing speed was associated with subjective memory complaints [16]. These studies together may suggest that what patients

* Corresponding author at: Department of Clinical Neuropsychology, Astley Ainslie Hospital, 133 Grange Loan, Edinburgh EH92HL, UK.
E-mail address: deborah.tinson@nhslothian.scot.nhs.uk (D. Tinson).

https://doi.org/10.1016/j.yebeh.2017.11.028
1525-5050/

consider when making memory complaints could be influenced by a wide view of memory skills, including access to vocabulary and processing speed, which may not be assessed in some formal memory tests.

Methodological differences between studies could be a further explanation for inconsistencies [8]. Some studies have used standardized questionnaires to assess memory complaints, while others used only a single question or visual analogue scale. Choice of objective memory test has also varied. Many studies have used formal neuropsychological tests, but these may not reflect the type of memory demands which occur in everyday situations and are sampled on memory complaint questionnaires. For example, some formal tests focus only on retrospective memory (the ability to explicitly recall previously encountered material), whereas patients complain of everyday failures in both retrospective memory [2] and prospective memory (forgetting something which they plan to do) [11,17]. Discrepancies might be reduced by ensuring the best possible match between the memory complaint questionnaire and the memory tests used.

One consistent finding is that mood is the factor which most often accounts for the variance in subjective memory complaints, explaining from 17% to 58% of the variance [8]. Rates of depression are high in patients with epilepsy [18] (approximately 30–40%), possibly explaining the high rates of memory complaints. Hall et al. [8] suggest that our understanding of the link between depression and high reporting of memory complaints may be facilitated by the use of a clear theoretical framework. The cognitive theory of depression [19] focuses on cognitive biases found in depression and the typical 'cognitive triad' of negative or dysfunctional attitudes and schemata about the self, the world, and the future. One model that addresses perceptions within the area of illness is the 'Common Sense Model of Illness (CSM) [20]. This proposes that patients develop cognitive and emotional representations of their illness based on knowledge gained from internal sources, such as symptoms and external sources including medical and lay information. These then guide coping strategies which aim to reduce the perceived threat of illness. Illness perceptions have consistently accounted for more of the variance in measures of coping (e.g., seeking social support) and outcomes (e.g., mood disturbances and recovery) than objective measures of illness severity [21,22]. Negative illness perceptions have been found to be associated with complaints of symptoms, for example noncardiac chest pain [23]. Many studies have looked at the direct associations between illness representations and outcomes, without looking at coping as a mediator [24]. There is some evidence that illness perceptions may contribute to outcomes such as quality of life, independently of mood [25].

Research has identified key dimensions to the way in which people structure their illness perceptions, which has led to the development of standardized assessment scales [26–28]. One of these, the Brief Illness Perceptions Questionnaire [28], can give a total score representing degree of perceived 'illness threat'.

Previous studies with patients with epilepsy have demonstrated associations between mood, coping, and illness perceptions [29,30]. To date, no published epilepsy study has examined whether illness perceptions, as measured by a validated scale, are associated with perceived symptoms such as memory complaints. The present study utilized two objectively measured tests of cognitive performance (a memory test and a verbal fluency test) and two self-report questionnaires (assessing mood and illness perceptions). We hypothesized that in a general tertiary clinic sample of patients with epilepsy: 1: An 'ecologically valid' measure of objective memory would correlate with subjective memory complaints, 2: Verbal fluency would correlate with subjective memory complaints, 3: Lower mood and higher perceived illness threat would correlate with more memory complaints, and 4: After controlling for objective memory and verbal fluency, mood and perceived illness threat would each contribute to the variance in memory complaints and account for more of the variance than would the objective measures of cognition.

2. Method

2.1. Participants

The epilepsy sample comprised adult patients in a tertiary care epilepsy clinic in the Department of Clinical Neurology (DCN) at a General Hospital. All patients were diagnosed with epilepsy, classified where possible according to NICE criteria [31]. Diagnoses were supported by clinical observation and neuroimaging data (EEG and MRI scan). Inclusion criteria were the following: a) aged between 18 and 65 years old, b) no history of alcohol dependency or substance abuse, c) no formal diagnosis of a language disorder, d) able to speak, read, and write English fluently, and e) no major psychiatric disorders if this was currently likely to impair judgement and participation e.g., schizophrenia and manic depression. Patients with major depression or anxiety were thus not excluded if they were able to participate, f) no history of head injury unless the head injury was the cause of the epilepsy, g) no significant sensory impairment, and h) no epilepsy related surgery within the last 2 years, chosen as a time period after which the effective outcome of surgery is becoming clear [32]. This information was obtained from medical records as well as by a self-report screen.

Sixty-four patients consented to take part in the study. However, 20 patients did not attend for assessment because of seizures, illness, travel difficulties, or unspecified factors. This resulted in a final sample of 44 patients with epilepsy. Ten patients had a diagnosis of focal seizures, 15 generalized seizures, and 11 both. For the remaining 8 patients, information on seizure type was not available in medical notes. Of the patients with focal seizures, 6 had seizures of temporal lobe origin, and 4 frontal lobe origin. Twenty-three patients were on neuropharmacological monotherapy and 20 on polytherapy. Mean duration of epilepsy (since diagnosis) was 22.9 years, with a range from 6 to 60 years. Four patients (9%) had neurosurgical procedures related to their epilepsy, between 2 and 40 years previously.

Forty-three adult controls met the same inclusion criteria as patients but had no history of epilepsy. In response to questioning, one control reported that they had a mild brain stem injury in the past from which they stated that they had made a full recovery. No other control had a neurological problem. There were no differences between patients and controls on age: Mann–Whitney *U* test epilepsy median = 43.50, median absolute deviation = 14.08, controls = 38.00 (23.72), and U = 921; or on years of education epilepsy = 16 (2.97), control = 16 (2.97), and U = 1144.50. There were no significant differences between the groups on gender distribution tested by Chi square test: males with epilepsy = 10, control male = 15, and $X^2 = 1.03$. Furthermore, there were no significant differences between the groups on estimated Intelligence quotient (IQ) on the Test of Premorbid Functioning (TOPF) [33] tested by *t*-test: epilepsy mean = 105.12, standard deviation = 12.72, controls = 111.4 (11.25), and T (82.77) = 2.44. One patient with epilepsy spoke fluent English but was not a native English speaker. Therefore, the TOPF was not administered for this patient.

2.2. Measures

2.2.1. Memory complaints

The Prospective Retrospective Memory Questionnaire (PRMQ) assesses self-reported memory in everyday life; 8 questions measuring prospective memory and 8 measuring retrospective memory. The PRMQ has been well validated and has good internal consistency [34,35]. Respondents rate how often each type of memory failure occurs, on a Likert-type scale ranging from 1 = 'never' to 5 = 'very often', giving a maximum score of 80. Higher scores indicate poorer perceived memory. The normative mean for total score is 38.88 [35].

2.2.2. Objective memory

The Rivermead Behavioural Memory Test – Extended Version (RBMT-E) was developed to detect mild memory impairment in