



Brief Communication

Clinical characteristics of patients with epilepsy in a specialist neuropsychiatry service

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ABSTRACT

Neuropsychiatry services provide specialist input into the assessment and management of behavioral symptoms associated with a range of neurological conditions, including epilepsy. Despite the centrality of epilepsy to neuropsychiatry and the recent expansion of neuropsychiatry service provision, little is known about the clinical characteristics of patients with epilepsy who are routinely seen by a specialist neuropsychiatry service. This retrospective study filled this gap by retrospectively evaluating a naturalistic series of 60 consecutive patients with epilepsy referred to and assessed within a neuropsychiatry setting. Fifty-two patients (86.7%) had active epilepsy and were under the ongoing care of the referring neurologist for seizure management. The majority of patients (N = 42; 70.0%) had a diagnosis of localization-related epilepsy, with temporal lobe epilepsy as the most common epilepsy type (N = 37; 61.7%). Following clinical assessment, 39 patients (65.0%) fulfilled formal diagnostic criteria for at least one psychiatric disorder; nonepileptic attack disorder (N = 37; 61.7%), major depression (N = 23; 38.3%), and generalized anxiety disorder (N = 16; 26.7%) were the most commonly diagnosed comorbidities. The clinical characteristics of patients seen in specialist neuropsychiatry settings are in line with the results from previous studies in neurology clinics in terms of both epilepsy and psychiatric comorbidity. Our findings confirm the need for the development and implementation of structured care pathways for the neuropsychiatric aspects of epilepsy, with focus on comorbid nonepileptic attacks and affective and anxiety symptoms. This is of particular importance in consideration of the impact of behavioral symptoms on patients' health-related quality of life.

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1. Introduction

Neuropsychiatry is a historically rooted clinical discipline which lies at the interface between neurology and psychiatry [1]. Neuropsychiatry services are currently undergoing considerable expansion, mainly driven by clinical need and the increased understanding of the mechanisms whereby central nervous system pathology can lead to motor, sensory, cognitive, and behavioral manifestations or, more frequently, to a combination of the above. In 2012, the "Manual for prescribed specialized services" from NHS England Commissioning Board [2] provided a service summary for neuropsychiatry. According to this document, neuropsychiatry services offer "assessment and treatment for patients with neurological diseases and associated severe psychiatric symptoms or severe and disabling neurological symptoms without identified neurological cause". The specialist nature, multidisciplinary approach,

and integrated model of care provided by neuropsychiatry services were appropriately emphasized: "neuropsychiatry services work closely with other neuroscience and mental health services and have expertise provided by neither service alone". Epilepsy was listed among the exemplar conditions for which patients are usually seen by neuropsychiatrists "because of cognitive, behavioral or psychiatric symptoms".

More recently, Bhattacharya et al. [3] outlined barriers and lessons for commissioning neuropsychiatry services and identified four groups of patients neuropsychiatry services provide assessment, investigation, and treatment for: 1) patients with "a neuropsychiatric disorder (cognitive, behavioral or psychiatric symptoms) associated with a recognized neurological condition or organic brain lesion such as Parkinson's disease, epilepsy, acquired brain injury"; 2) patients with "a neuropsychiatric disorder or mental illness with a yet unrecognized neurological condition or probable organic etiology (e.g. psychosis related to as yet undiagnosed epilepsy or encephalitis)"; 3) patients with "functional neurological disorders (e.g. dissociative seizures, dissociative memory disorder or conversion disorder)"; and 4) patients with "specific conditions such as neuropsychiatric sleep disorders, complex neurobehavioral disorders or neuropsychiatric manifestations of extracranial physical

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conditions". Epilepsy and nonepileptic attack disorder (dissociative seizures) feature in three out of these four categories. This is not surprising, in consideration of the known prevalence of psychiatric disorders in populations with epilepsy [4–6] and frequent co-occurrence of epileptic and nonepileptic attacks in the same patient [7]. From an academic perspective, the growth of scientific publications such as those in this journal also highlights the growing awareness of the impact of neuropsychiatric aspects of epilepsy to both clinical management and research in epilepsy [8]. Despite the centrality of epilepsy to neuropsychiatry, specialist service provision is at best patchy, and not enough is known about the clinical characteristics of patients with epilepsy who are referred to specialist neuropsychiatry services. We aimed to fill this knowledge gap by retrospectively evaluating a naturalistic series of consecutive patients with epilepsy referred to and assessed in a specialist neuropsychiatric setting.

2. Methods

As part of a service evaluation, we retrospectively assessed the demographic and clinical characteristics of 60 patients with epilepsy consecutively seen at the specialist Neuropsychiatry Service, BSMHFT, and University of Birmingham (United Kingdom) for the assessment and management of behavioral problems. Following a careful evaluation of the referral, patients were allocated to the specialist clinics for evaluation of "epilepsy and comorbid mental disorder" by a consultant in behavioral neurology (AEC). Both demographic and clinical details were extracted from the patients' medical records. These included data on gender, age at the onset of the epileptic disorder, age at the time of referral, and syndromic diagnosis including seizure frequency and neurophysiological and neuroimaging findings. Seizure severity was assessed using the National Hospital Seizure Severity Scale (NHS3) as part of the routine clinical evaluation. This clinician-rated measure of seizure severity is based on the Chalfont Seizure Severity Scale and produces a score from 1 to 27 according to seven seizure-related items, with higher scores indicating increased severity [9]. Psychiatric comorbidities were the focus of the neuropsychiatric input and were defined as an Axis I diagnosis from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) [10]. Finally, information about treatment interventions (pharmacotherapy for the epilepsy and the behavioral comorbidities as well as behavioral therapy) was also extracted from the clinical notes.

3. Results

The demographic and clinical characteristics of the sample are summarized in Table 1.

Fifty-two patients (86.7%) had active epilepsy at the time of referral and were under the ongoing care of the referring neurologist for seizure management. The majority of patients (N = 42; 70.0%) had a diagnosis of localization-related epilepsy; temporal lobe was the most common localization. Following the comprehensive evaluation, 39 patients (65.0%) fulfilled DSM criteria for at least one psychiatric disorder, whereas the remaining 21 patients (35.0%) had subthreshold behavioral symptoms. The most common comorbidities were nonepileptic attack disorder and other functional neurological symptoms (N = 38; 63.3%), followed by affective disorders (N = 25; 41.7%) and anxiety disorders/obsessive–compulsive disorder (N = 19; 31.7%). The most significant difference in gender was seen in patients diagnosed with affective disorders, with 18 (72.0%) of these patients being females. Eight out of the 10 patients diagnosed with learning disability had mild-to-moderate impairment, whereas the remaining 2 fulfilled criteria for severe learning disability [11]. At the time of the referral, all patients but one had been prescribed at least one antiepileptic drug. Lamotrigine was the most frequently used medication (N = 22; 36.7%), followed by levetiracetam (N = 22; 36.7%), valproate (N = 16; 26.7%), carbamazepine/oxcarbazepine/eslicarbazepine (N = 14; 23.3%), topiramate (N = 10;

Table 1

Demographic and clinical characteristics of N = 60 patients with epilepsy consecutively seen at the specialist Neuropsychiatry Service.

Female gender (N, %)	39 (65.0%)
Age at assessment (mean, sd)	40.0 (15.2)
Age at epilepsy onset (mean, sd)	21.8 (17.2)
Age at epilepsy diagnosis (mean, sd)	25.9 (17.1)
Epilepsy type:	
Temporal lobe epilepsy (N, %)	37 (61.7%)
Idiopathic generalized epilepsy (N, %)	18 (30.0%)
Frontal lobe epilepsy (N, %)	5 (8.3%)
Monthly seizure frequency (mean, sd)	11.6 (25.9)
NHS3 score (mean, sd)	11.7 (6.0)
EEG findings:	
Abnormal (N, %)	36 (60.0%)
Normal (N, %)	16 (26.7%)
Not available (N, %)	8 (13.3%)
MRI findings:	
Normal (N, %)	29 (48.3%)
Not available (N, %)	17 (28.3%)
Abnormal (N, %)	14 (23.3%)
Psychiatric disorders:	
Nonepileptic attack disorder (N, %)	37 (61.7%)
Major depression (N, %)	23 (38.3%)
Generalized anxiety disorder (N, %)	16 (26.7%)
Autism spectrum disorder (N, %)	4 (6.7%)
Obsessive–compulsive disorder (N, %)	3 (5.0%)
Psychotic disorder (N, %)	3 (5.0%)
Tic disorder (N, %)	3 (5.0%)
Bipolar affective disorder (N, %)	2 (3.3%)
Eating disorder (N, %)	1 (1.7%)
Substance abuse (N, %)	1 (1.7%)
Functional neurological symptoms (N, %)	1 (1.7%)
Learning disability (N, %)	10 (16.7%)

Abbreviations: NHS3, National Hospital Seizure Severity Scale; EEG, electroencephalography; MRI, magnetic resonance imaging.

16.7%), zonisamide (N = 9; 15.0%), gabapentin (N = 6; 10.0%), phenytoin (N = 3; 5.0%), lacosamide (N = 1; 1.7%), and perampanel (N = 1; 1.7%). Thirty-two patients had been prescribed other medications acting on the central nervous system. Selective serotonin reuptake inhibitors were the most frequently used (N = 24, 40.0%: N = 12 citalopram, N = 10 sertraline, N = 1 fluoxetine, N = 1 paroxetine), followed by atypical antipsychotics (N = 5, 8.3%: N = 3 quetiapine, N = 1 risperidone, N = 1 aripiprazole), serotonin and norepinephrine reuptake inhibitors (N = 4, 6.7%: N = 3 venlafaxine, N = 1 duloxetine), tricyclic antidepressants (N = 4, 6.7%: N = 3 amitriptyline, N = 1 lofepramine), and other psychotropic medications (N = 3, 5.0%: N = 1 mirtazapine, N = 1 pregabalin, N = 1 trazodone). Twenty-five patients (41.7%) had also been referred for psychological intervention focusing on their behavioral symptoms.

4. Discussion

This retrospective study provided the first naturalistic data on the clinical characteristics of patients with epilepsy within a specialist neuropsychiatry service. Our sample had a preponderance of female patients, in line with previous observations that women with epilepsy are at a slightly higher risk of presenting with psychiatric disorders [12]. This gender bias was more pronounced for affective disorders, possibly as a result of multiple factors, including known effects of sex hormones at the level of the hippocampus [13]. Most patients in our sample had a diagnosis of localization-related epilepsy. This subgroup had later age of onset and seizures with a higher rate of refractoriness to antiepileptic treatment. These findings are in line with previous reports that temporal lobe epilepsy is the type of epilepsy most commonly associated with behavioral problems requiring neuropsychiatric input [14], raising the possibility that affective disorders in temporal lobe epilepsy might reflect a shared neurobiological substrate [15].

As expected, nonepileptic attack disorder was the most common comorbid psychiatric condition in our sample. This is in line with the

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