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Sexual desire and satisfaction after resective surgery in patients with mesial temporal lobe epilepsy with hippocampal sclerosis

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ABSTRACT

Utilizing a questionnaire, we inquired about the self-perceived sexual behavior of 50 married males with mesial temporal lobe epilepsy with hippocampal sclerosis (MTLE-HS) before and after anterior temporal lobectomy (ATL) and compared the results with those of 50 age-matched healthy married males. The sexual desire and satisfaction of the patients were poor when compared to the controls. Although a majority of the sexual domains improved following ATL, even after a median duration of five years, the sexual status of the patients did not match with that of the controls. Those who, after ATL, were seizure free, had one or no antiepileptic drug (AED) and had an EEG without epileptiform abnormalities achieved a better sexual outcome. We conclude that sexual dysfunction is frequent in male patients with MTLE-HS. They require preoperative assessment to identify their sexual inadequacies as well as counseling about the expected post-ATL sexual outcome. Discontinuation of enzyme-inducing AEDs facilitates post-ATL improvement in sexual function.

1. Introduction

Several studies have reported a higher prevalence of sexual dysfunction in persons with epilepsy when compared to the general population [1–3]. Among epilepsies, occurrence of sexual dysfunction is significantly higher in persons with temporal lobe epilepsy (TLE) when compared to those with extratemporal and primary generalized epilepsies [4,5]. Alterations in sexual behavior can occur interictally [5], ictally [6] or postictally [7]. Interictal hyposexuality, defined as a global diminution in sexual interest associated with impaired sexual performance, is the most common sexual dysfunction observed in persons with TLE [5,8,9]. Disturbed hypothalamic regulation of the secretion of pituitary gonadotropins due to ictal and interictal epileptiform discharges (IEDs), decreased serum levels of sex hormones because of their increased metabolism by enzyme-inducing antiepileptic drugs (AEDs), and psychosocial and psychopathological factors have been hypothesized to explain sexual dysfunction in persons with TLE [1–3].

Epilepsy surgery is a well accepted treatment option for selected patients with AED-resistant epilepsies. Mesial temporal lobe epilepsy (MTLE) is the most frequent surgically remediable human epilepsy syndrome, and hippocampal sclerosis (HS) is the most commonly encountered lesion in patients with MTLE [10]. Anterior temporal lobectomy with amygdalohippocampectomy (abbreviated hereafter as anterior temporal lobectomy [ATL]) is the standard treatment for AED-resistant MTLE-HS, resulting in postoperative seizure freedom in over two-thirds of patients [11,12]. A majority of patients have been noted to appreciate improvement in their sexual function following epilepsy surgery, and patients who achieve seizure freedom following surgery are more likely to improve when compared to those with continuing seizures [8,9,13].

Despite its fundamental role in human life, there has been, surprisingly, little research on the sexual outcome of epilepsy surgery. The available studies have the following limitations: small sample size, variable definition of sexual dysfunction, predated the era of modern neuroimaging, lack of controls, grouping of patients with disparate epilepsy syndromes and surgical procedures together, and failure to compare the pre- and post-operative sexual status in the same groups of patients. To overcome these deficiencies, we assembled a homogeneous group of married males with MTLE-HS and inquired through a questionnaire their perceived sexual desire and satisfaction and compared the results with those of age-matched healthy control subjects. We also investigated the factors that influenced the pre- and post-ATL sexual behavior.

2. Methods

2.1. Study site

This study was conducted at the R. Madhavan Nayar Center for Comprehensive Epilepsy Care, a tertiary referral center situated at

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Trivandrum, the capital city of the south Indian state of Kerala. All subjects of the study were residents of Kerala, which is distinguished from the rest of India by the high level of literacy and health awareness of its population. The institutional review board approved the study.

2.2. Patient selection

We randomly selected 50 married men with MTLE-HS who had undergone ATL and had completed a minimum of one year postoperative follow-up after excluding those with active pre- and postoperative psychosis, those with postoperative motor deficits and those who were reluctant to participate. The preoperative diagnosis of MTLE-HS was based on a standard presurgical evaluation protocol that included a detailed clinical history and examination, long-term video-EEG monitoring, 1.5-T MRI and neuropsychological evaluation as described by us in detail previously [14,15]. The standard ATL carried out under general anesthesia by the same neurosurgeon consisted of excision of the neocortical structures, followed by microsurgical resection of the amygdala, and en bloc resection of the hippocampus and parahippocampal gyrus. The histopathological findings were reviewed, and the diagnosis of MTLE-HS was confirmed in each of the selected patients by the loss of neuronal cell population of 30% or more in the CA1 sector of the hippocampal formation with or without neuronal loss and gliosis involving other mesial temporal structures [16]. After ATL, we routinely follow-up the patients at 3 months, at one year, and at yearly intervals thereafter. During these visits, in addition to clinical evaluation, the patients undergo detailed psychological and psychiatric assessments and EEG recording for at least 40 min, both in wakefulness and sleep [17]. We start withdrawing AED in all seizure-free patients beginning at 3 months after ATL when they are on two or more AEDs and beginning at one year in those who are on one AED [15]. Though decision to withdraw one AED over the other was variable, one of the first-line AEDs (phenobarbital, phenytoin, or carbamazepine) was always withdrawn at the end. For this study, we retrieved all the above patient information from the elaborate prospective database maintained at the center. We classified the postoperative seizure outcome as seizure free (no seizure recurrence other than auras) or having continuing seizures.

2.3. Controls

We randomly selected 50 healthy married males from the relatives of the patients attending the general neurology clinic. They were matched with the patients with respect to age, religion and socioeconomic strata.

2.4. Questionnaire and its administration

The study questionnaire, which was developed by the authors, contained close-ended self-rating questions designed to understand five sexual domains: sexual desire, sexual satisfaction, sexual anxiety, sexual depression and sexual esteem (see Appendix A). Items included in the questionnaire were adopted from Sexual Desire Inventory [18] and Index of Sexual Satisfaction [19] and were modified by us based on a series of semistructured interviews during the pilot phase of the study with volunteers and patients, taking into consideration the ability of the subjects to understand and respond in a socially and culturally acceptable manner. In addition, general self-esteem, anxiety and depression were also assessed. To assess the latter, we used a modified Hospital Anxiety and Depression (HAD) Scale [20]. After obtaining informed written consent, the male psychologist involved with the study (SP) explained the purpose of the study and asked the participants to complete the questionnaire in the local Malayalam language, which was distributed by a male medical social worker (JPU). The psychologist assured anonymity and complete confidentiality and encouraged the subjects to answer the questions as honestly as possible. The psychologist and medical social worker intervened only to clarify a question, if required; no attempt was made to prompt an answer. The patients were asked to complete two sets of the questionnaire — one concerning their sexual behavior before ATL and the second after ATL at the time of study.

2.5. Measures

The subjects were asked to quantify their response to the individual questions in each of the domains tested on a multiple-point scale (see Appendix A for details). We summed the item responses for each of the domains to create a score and compared the scores of each of the domains between different groups of subjects.

2.6. Statistical methods

We summarized quantitative variables as mean ± standard deviation (SD) and median and categorical variables as percentages. We used the Mann–Whitney test, chi-square test and Wilcoxon's signed-rank test for statistical comparisons by univariate analysis. To assess the correlation between sexuality and general self-esteem, and general anxiety, we used Spearman's rank correlation test. Though we subjected the factors found to be significant on univariate analysis to multivariate linear regression analyses, small sample size limited the power of interpretation. We compared the sexual behavior status in three ways: 1) among patients, before vs. after ATL; 2) between patients before ATL and controls; and 3) between patients after ATL and controls. We also evaluated the influence of epilepsy-related variables on sexual behavior both before and after ATL. A P value ≤ 0.05 was considered significant.

3. Results

3.1. Demographic and clinical characteristics

The mean age of the 50 patients at the time of the study was 39.8 ± 6.3 years, and they were married for a mean duration of 12.8 ± 6.6 years. Thirty-two patients (64%) had antecedent febrile seizures. The median age of onset of epilepsy and median duration of epilepsy before ATL were 12 years (range: 3–32 years) and 22 years (range: 8–40 years), respectively. Forty (80%) patients were taking 2 AEDs simultaneously at the time of ATL. All patients were on at least one of the enzyme-inducing AEDs: carbamazepine (N = 31), phenytoin (N = 20) and phenobarbitone (N = 6). None received valproate. The most frequent add-on AED was clobazam. Twenty-three patients underwent right ATL and 27 left ATL. The median duration of follow-up after ATL was five years (range: 1–13 years). At last follow-up, 39 (78%) patients were seizure free, 10 (20%) patients were completely off AEDs, and 24 (48%) and 16 (32%) patients were on one and two AEDs, respectively. Out of the 39 patients who were seizure free at the last follow-up, only 10 were completely off AEDs. Five patients had completed just the first postoperative year at the time of the study and were on tapering doses of AEDs. We could not completely discontinue AEDs (though tapered from two to one AED) in the remaining 24 seizure-free patients either due to continuing auras or they did not consent to taper off AEDs because of the fear of consequence of seizure recurrence. Postoperative EEGs showed IEDs in 8 (16%) patients. We found no statistically significant differences between the patients and control groups with respect to demographic data, religion, education, occupation, monthly income, duration of marriage and associated medical conditions (Table 1).

3.2. Sexual behavior

3.2.1. Comparison between patients prior to ATL and controls

In Table 2, we have compared the sexual behavior of the patients before ATL with the controls. On all the five sexual domains – desire,