

Cognitive Behavioral Therapy for Temporal Lobe Epilepsy: A Case Report Revealing Improvement in Cognition, Quality of Life, Medical Needs, and Psychological Functioning

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Abstract

Cognitive Behavioral Therapy (CBT), for Adolescents diagnosed with temporal lobe epilepsy, may be beneficial for several reasons. It could reduce depression, anxiety, everyday worries, and even help in improving cognitive functioning and clinical symptomatology. Here, we present the case of a 15-year-old boy diagnosed with drug-resistant left temporal lobe epilepsy, whose psychological, cognitive, and clinical presentation significantly improved following 12 weekly sessions of CBT involving the youngster, his family, and school.

1. Introduction

Children diagnosed with epilepsy often present, more often than in the general population, with psychological disorders, neurodevelopmental disorders, academic difficulties, cognitive impairments, and even motor difficulties [1, 2] report that psychological disorders in children diagnosed with epilepsy are the best predictors for lowered quality of life and depression and anxiety in these children is much more prevalent than in the general population. Fastenau, Shen, Dunn et al. [3] and more recently Sogawa, Masur, O'Dell, Moshe, Shinnar [4] found that often children with epilepsy present not only with neuropsychological and general cognitive deficits, but also academic underachievement. Learning disabilities are also more likely to appear in children in epilepsy than in the general population Fastenau, Shen, Dunn, Austin [5]. Austin et al. [6] found that behavioral problems are also quite frequently an issue in pediatric epilepsy, before and after, the diagnosis of epilepsy in children.

Cognitive Behavioral Therapy (CBT) in adults diagnosed with epilepsy improved their psychological well-being in several studies [7]. The quality of life of adults with epilepsy seems to improve considerably with CBT, as well [8]. An older paper/review by Ramaratnam, Baker, Goldstein [9] reported on studies supporting the efficacy of CBT for reducing seizure frequency and also reported strong empirical evidence for the efficacy of CBT for improving quality of life, depression, and anxiety. The same review, however, also found some contradicting evidence on the aforementioned CBT successes in treating individuals with epilepsy. There are very few studies on the same subject matter with children and/or adolescents. Moore et al. [10] reported that children diagnosed with mental health disorders secondary to epilepsy or other chronic health illnesses exhibited improvement in clinical measures of depression and anxiety. Similarly, Blocher et al. [11] found that anxiety and depression in children with epilepsy was significantly reduced following computer based CBT. Apart from reported improvements in psychological well-being, Constantinou [12] found in a 24-member group of children (6 - 12 years old), diagnosed with epilepsy, that Cognitive Behavioral Therapy (CBT) improved their neuropsychological/cognitive, psychological, and clinical picture (visits to the hospital and number of epileptic seizures per week). In this small study children received CBT, which also included their parents and school, for 12 weeks. The current report is presenting a recent case of a child diagnosed with medial temporal epilepsy, who received CBT for 12 weeks.

2. Case Report

This study is describing the case of a 15-year-old boy diagnosed (4 years prior to the study) with medial temporal lobe epilepsy. He was attending the 9th year of secondary school during the study. The teenager was initially treated unsuccessfully with levetiracetam, but after 12 months, his pediatric neurologist switched his medication to lamotrigine. He was on 200 mg lamotrigine from the beginning to the end of this study. Imaging (when 12 and 14 years old) and EEG studies (every six months) showed left hippocampal sclerosis and left medial temporal involvement, respectively. At the commencement of the study, the reported seizures he was experiencing were focal with impaired awareness (complex partial).

The boy was born, after a good pregnancy, without any complications. He walked, spoke and reached all developmental milestones on time. Through nursery and kindergarten and elementary school he never experienced any documented emotional, social, behavioral or learning difficulties. At the age

2.1 Pre-intervention measures

A journal that he kept for 12 months prior to the commencement of the study, at the request of his pediatric neurologist, revealed that he was experiencing in the last 12 weeks, on average 4.25 seizures per week and visited the hospital or his pediatric neurologist on average 0.83 times per week. At the beginning of the study his empirically based syndrome scales, as measured by the Youth Self Report (YSR) that he completed, the Teacher Rating Form (TRF) that his school advisor completed, and the Childhood Behavioral Checklist, that his mother completed, (CBCL; Achenbach [13], were as follows:

Empirically Based Syndrome Scales	YSR T Score	TRF T Score	CBCL T Score
Depression/Anxiety	75	72	80
Withdrawn/Depressed	75	78	85
Somatic Complaints	85	90	85
Social Problems	80	82	85
Attention Problems	75	70	76
Thought Problems	80	84	80

Table 1: CBCL scores.

All other scales (i.e. thought problems, rule breaking behavior, and aggressive behavior) were below the clinical threshold of 65. At school, prior to the diagnoses of epilepsy his parents reported that he was an excellent student, while his performance at school, as reported by parents and student advisor, has been declining over the years (current grade point average of 74 out of 100 Vs. 92 out of 100 in 5th grade prior to the diagnosis of epilepsy).

The boy's measured intelligence quotient at the commencement of the study was 84, while his scores on the following indices of the WISC-V (Wechsler Intelligence Scale for Children, 5th Edition, Wechsler [14]) were significantly below average:

WISC-V Index	Standard Score
Fluid Reasoning	78
Working Memory	82
Processing Speed	84
Cognitive Proficiency	80

Table 2: WISC-V scores.

Finally, the boy's quality of life was measured at the commencement of the study with the KIDSCREEN-10 Index [15] for Children and Young People. His answers noted that he has been feeling lonely, sad, without energy, and unfit in the past week, while he endorsed "poor" in the overall rating of his current health.

2.2 CBT intervention

After the above assessment, the boy entered a 12-week-long cognitive behavioral therapy regimen with a licensed clinical psychologist specialized in pediatric clinical neuropsychology with a 20 year experience in CBT interventions. The psychologist addressed and offered CBT interventions in the following:

1. Stigma and self-image relating to epilepsy. The teenager ranked this as the matter of highest concern and wanted it to be addressed first. The psychologist used psychoeducation and thought restructuring (as described in [16] in order to address this issue.
2. Medical adherence and healthy habits (i.e. eating, sleeping, walking, hours spend on watching a screen, such as television, tablet, cell phone etc.). The teenager ranked this as his second most important issue, namely adhering to his medical regimen and medical recommendations. Therefore, the psychologist and the teenager worked on finding behavioral reinforcement in the teenager's environment for closely following his medical regimen and reducing excuses for not following his medical regimen. Also, psychoeducation was employed for this part.
3. The teenager ranked "low self-esteem" as the third most important issue he wanted to address with the psychologist. This was addressed using acceptance (as in acceptance and commitment therapy-ACT, [16, 17] and value setting [17, 18] as described in ACT.
4. Parental counseling in reducing stress and tensions at home. The importance of parental counseling for children with epilepsy is stressed and described in [19]. This part of the psychotherapy with the parents was focused on discussing with the parents their worries about their teenager and offering recommendations on how to reduce tension at home. The parents were also referred to two other psychologists for individual CBT, which they both begun after the third week of meetings.
5. School life and teacher consultation in dealing with the boy's concerns and their fears about dealing with his potential seizures at school. The psychologist liaised with the school teachers and administrators (as described in [20] following parental approval and the teenager's assent, and offered psychoeducation about epilepsy and advice on how to deal with the teenager's difficulties that may arise in school.
6. Setting personal and life values in general (as in ACT) as described in point #3.
7. Improving motivation for success in school and his life in the short, mid, and long terms using motivational interviewing (as described in [21]).
8. Dealing with everyday personal, family or school issues that may arise (e.g. anxiety relating to an upcoming test or a misunderstanding with a friend). The teenager was asked to bring up any worrisome, anxiety provoking or stressful events that were happening during his life during the 12 weeks that the sessions lasted. These were discussed towards the end of each of the 12 sessions.
9. The teenager was taught and practiced various relaxation techniques that he found best fitting for him (i.e. breathing retraining, muscle relaxation and guided imagery).

The teenager attended all 12 sessions. Each session with the teenager lasted 50 minutes and at each session only the psychologist and the teenager were present. His parents attended together 6 separate 50 minute sessions with the psychologist (every other week during the 12 week period).

2.3 Post-interventions measures

For the 12 weeks that the CBT lasted, the boy was asked to keep records of his seizures, visits to hospitals or his pediatric neurologist and fill out weekly the KIDSCREEN-10 Index. At the end of the 12 weeks the child, his mother, and school advisor were asked to fill out again the YSR, CBCL, and TRF, respectively and the child was re-assessed with the WISC-V.

2.4 Results of post-intervention measures

The boy, at the end of the 12-week period, was reporting an average (including all 12 weeks) 1.98 seizures per week and 0.52 weekly visits to the hospital or his pediatric neurologist. Only in the first two weeks of CBT the boy reported more than 1.98 seizures per week and only in the first three weeks of CBT he reported more than 0.52 weekly visits to the hospital or pediatric neurologist. Neither the number of seizures nor the visits exceeded in any of the 12 CBT weeks the pre-treatment average.

On the YSR, CBCL, and TRF his empirically based syndrome scales were as follow at the end of the 12 weeks:

Empirically Based Syndrome Scales	YSR T Score	TRF T Score	CBCL T Score
Depression/Anxiety	62	68	60
Withdrawn/Depressed	55	63	58
Somatic Complaints	58	60	55
Social Problems	45	56	52
Attention Problems	65	62	64
Thought Problems	45	52	55

Table 3: Post-treatment CBCL score.

All CBCL scores improved at the post-treatment measurement. His intelligence quotient on WISC-V was 92 with four of the aforementioned indices improving and only processing speed remaining the same:

WISC-V Index	Standard Score
Fluid Reasoning	90
Working Memory	88
Processing Speed	84
Cognitive Proficiency	84

Table 4: Post-treatment WISC-V scores.

The improvements on WISC-V scores on Full Scale IQ, Working Memory, and Fluid Reasoning, could not be better explained by practice effects. His KIDSCREEN-10 Index showed a decline that began after the 3rd week of CBT. On the 12th week, the boy was reporting that he was not lonely or sad anymore, that he had good energy levels, and that he was more somatically fit. He saw his overall rating of his current health as good. His parents and teachers reported a considerable improvement on his school performance and test scores, while his expected grade point average (3 weeks before receiving his grade report) was higher than 85, according to his school advisor.

On an informal interviewing of the child he reported that he found CBT very helpful, especially value setting and minimizing his perceived stigma as a person diagnosed with epilepsy. His parents and teachers also reported being considerably helped by the consultations and that overall they see the child being happier and more energetic.

3. Discussion

CBT is a non-invasive low-risk psychotherapeutic approach that has been found to be beneficial in the overall management of chronic illnesses, such as epilepsy in adults [16]. The current case study followed a 15-year-old boy diagnosed with medial temporal lobe epilepsy with clinical findings in imaging and EEG studies. The boy, for the duration of the case study, continued to receive the same medical treatment (lamotrigine) that he has been receiving in the last three years prior to the current study. His seizures continued to be a significant issue in his life, given that in the last 12 months, prior to the case study, he had been experiencing about four seizures per week and was visiting his pediatric neurologist or hospital about three times per week. His psychological well-being, quality of life, school performance, social life, and cognitive functioning appeared to be negatively impacted by the presence of epilepsy.

Following the 12 weeks of CBT the child, his parents, and school advisor all reported qualitative and quantitative improvements in all aforementioned areas. In addition, his scores on WISC-V cognitive measures improved. Of course there are several caveats in this case study as these results need to be replicated by numerous other case studies or a larger group study with stronger controlling of extraneous variables. At the moment, however, this case study is replicating the positive results of studies with adults diagnosed with epilepsy and the beneficial effects of empirically supported psychotherapy, such as CBT, on chronic medical issues.

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