



## Case Report

## Resolving cognitive dissonance by acquisition of self-organizational skills may decrease drug-resistant seizures – A case report

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## ARTICLE INFO

## Article history:

Received 14 March 2014

Accepted 25 March 2014

Available online 23 April 2014

## Keywords:

Epilepsy

Stress

Drug-resistant seizures

Seizure trigger

Psychotherapy

Cognitive-behavioral therapy

## ABSTRACT

A recent review of psychobehavioral therapy for epilepsy recommends case reports as a research design to explore specific psychological mediators of psychobehavioral interventions for epilepsy that address the bidirectional relationship between psychological states and seizures. The report was prepared according to the consensus-based CARE guidelines for standardized clinical case reporting.

This is a case of a 16-year-old male individual with a diagnosed seizure disorder and learning disability who continued to have daytime and nighttime seizures on a regular basis despite exhausting of available conventional treatment options. A psychological assessment led to the working hypothesis that cognitive dissonance between fear of failure and high expectations of self had led to a “broken” self-image and active avoidance of responsibility that resulted in intense emotional distress which correlated with the occurrence of seizures. This working hypothesis resulted in a treatment plan that employed the acquisition of self-organizational skills and relaxation techniques as the main therapeutic strategy. Motivational strategies were employed to facilitate the regulation of lifestyle-related seizure precipitants. In this case, the acquisition of self-organizational skills and the development of seizure interruption techniques correlated with a clinically significant decrease of seizures. Methodological limitations of the interpretation of the presented data are discussed.

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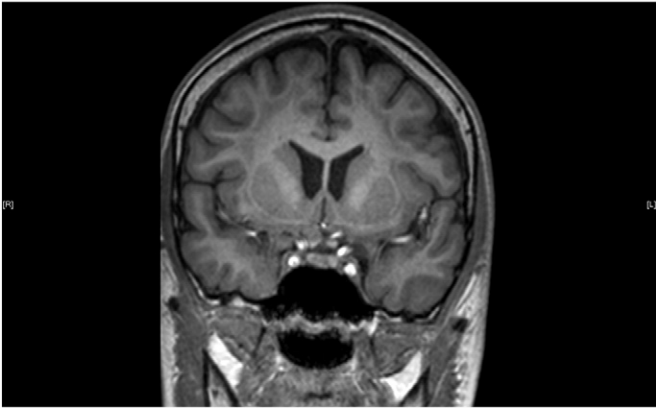
## 1. Introduction

Patients frequently report that emotional stress increases their seizure frequency [1]. Psychobehavioral approaches attempt to identify the underlying cognitive dissonance creating the intense emotional discomfort that can trigger seizures [2]. A recent review of psychobehavioral therapy for epilepsy recommends case reports as a research design to explore specific psychological mediators of seizure self-control [3]. This case report illustrates how a psychobehavioral intervention addresses cognitive dissonance in order to decrease internal stressors of seizures and was prepared according to the consensus-based CARE guidelines for standardized clinical case reporting [4].

## 2. Case report

A. is a 16-year-old male with seizures since age 2 years. His magnetic resonance imaging (MRI) shows extensive bilateral gray matter band heterotopia (Fig. 1). Electroclinical day- and nighttime seizures captured during video-EEG studies displayed seizures with loss of consciousness consisting of irregular shaking of his body correlating with epileptiform activity originating from bilateral parasagittal regions synchronously and tonic posturing of arms originating from the left hemisphere. Before losing consciousness, he feels a loss of sensation in some of his body parts, usually starting from his right arm. These findings suggest localization-related epilepsy originating from the left hemisphere and bilateral parasagittal regions with simple and complex partial as well as secondarily generalized seizures. He experiences predominantly nocturnal seizures that occur in clusters of up to four complex partial seizures once or twice per week and daytime seizures once or twice per month. A.'s parents had installed an acoustic monitoring device in his bedroom and reported that this baseline seizure frequency had remained unchanged for >3 years prior to the beginning of the

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**Fig. 1.** Coronal MRI section demonstrating thin bilateral laminar heterotopia.

intervention. A. is currently taking valproate, topiramate, and lamotrigine and complies with the modified Atkins diet protocol. Past medication failures have included carbamazepine, levetiracetam, clobazam, and oxcarbazepine. During previous psychological assessments, he has been diagnosed with a verbal and auditory learning disability as well as expressive language impairment. Because of parental worries that challenges would increase A.'s seizure frequency, A. received parental support for doing his schoolwork, and he was never expected to contribute to household chores. As a result, A. was deprived of opportunities to build his confidence in his own achievements and pictures himself as “broken” (Fig. 2). Otherwise, A. is in good health; he has never used alcohol or tobacco. A. and his parents consented to the use of these data for this case report.

### 3. Intervention

To resolve the resultant conflict between insecurity with his performance, fear of failure, and high expectations of himself, A. actively



**Fig. 2.** Self-portrait drawn by A. He explained that the bandages on the left hand and foot indicated that he was “broken”.

avoided responsibility and demanded help rather than engaging in self-reliant problem-solving behaviors. This defense mechanism that incorporated learned helplessness and secondary gain issues was exacerbated by an anticipated challenge at school or social anxiety.

The Andrews/Reiter (A/R) intervention was employed. After an initial assessment period comprising two sessions of 3 h each, a treatment plan was formulated including the workbook “Taking Control of Your Epilepsy” [2], daily journaling, and daily relaxation exercises. The participant received training in abdominal breathing and visualization techniques (imaginary journey and an attention-focusing exercise) to address early seizure warning symptoms. The initial assessment was followed by weekly counseling sessions of 10–30 min that were conducted over the phone for 12 months, and monthly sessions were conducted for a 6-month follow-up period. Seizure logs of self-report seizure frequency were completed by A.'s parents. Anticonvulsant medication remained unchanged during the intervention and the follow-up period.

### 4. Results

A. engaged in a daily guided relaxation practice after returning from school and listened to a nonguided relaxation tape before going to bed. He reports that he is able to interrupt warning signs of the early onset of a seizure by utilizing deep diaphragmatic breathing, visualization techniques, and self-affirmation statements of personal choice (e.g., “peace and release”). A.'s parents report that he took on responsibility for the completion of his schoolwork and studies in a self-motivated and timely fashion, all of which helped him to prevent the buildup of anxiety. After a nighttime seizure, he can reliably identify the behavioral strategy which he could have employed in order to avoid the buildup of distress during the day prior to the seizure. A. admitted that it was, at times, easier to have a seizure rather than to address the situational accumulation of seizure triggers by taking responsibility and implementing the appropriate proactive behaviors. Hence, motivational exercises were employed to allow A. to deliberately weigh the motivational factors and obstacles regarding prior set goals (e.g., an early bed rest) to facilitate informed changes of his present decision-making habits. While he considered himself “broken” at the beginning of the intervention, he has developed a perspective on life in which he feels that he can shape his future according to his preferences if he follows through with taking responsibility for the acquisition of self-organizational skills (see patient perspective in Table 1).

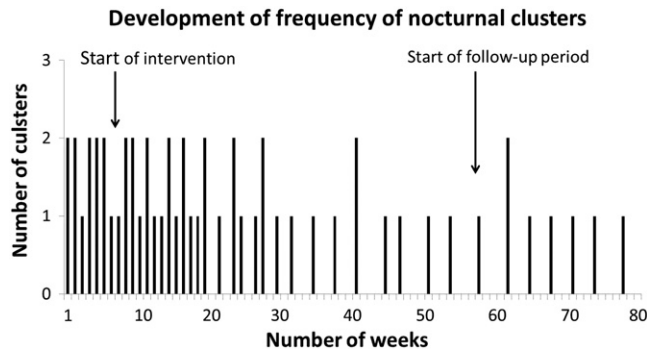
By the end of the follow-up period, A. had not experienced any further daytime seizures for 15 months. His nighttime seizures dropped to 1–2 clusters per month after 6 months of participating in the intervention. Since the internalization of the therapeutic principles is an active process that requires continuous learning, motivation, and compliance of the individual, effects are usually expected 3–6 months after the beginning of the intervention, especially since it takes an individual at least 12 weeks to finish the 12 sessions of the workbook. This seizure frequency has remained stable during the remaining 6 months of the intervention and the 6-month follow-up period (Fig. 3). At the

**Table 1**

Patient perspective.

*“I learned many things from the Andrew's/Reiter's approach. First off, I learned that the relaxation is an important factor and it helps calm down the brain and makes my body feel totally relaxed. Another thing I learned is the steps that help me when I am having a seizure or trying to abort it. Now I understand that if I slack off and don't follow the treatment plan, I would just let my brain know that it is way easier to have seizures and let my seizures take control over my body .... But that is not what I want. I will work hard and if I follow the plan well, I can have no seizures and beat my record of 2–3 weeks.”*

A. was instructed to write about his future vision of himself as a motivational strategy to allow him to become fully aware of the future consequences of his present decision-making habits. We provide his concluding sentences to illustrate the patient's perspective on the intervention.



**Fig. 3.** This figure shows the development of the frequency of nocturnal clusters over time. The vertical arrows indicate major time points of the intervention.

time of this report (3 months after the follow-up period), the seizure frequency has still remained the same despite increasing stressors that arise within the framework of A.'s successful admission to college.

## 5. Discussion

The implementation of the therapeutic strategies correlated with a cessation of daytime seizures and a clinically significant drop of nighttime seizures. Literature suggests that seizure frequency may be positively influenced by the restoration of balance within the autonomic nervous system by the regular practice of relaxation exercises and proactive avoidance of emotional distress during wakefulness, thereby preventing the buildup of seizure activity [3]. Furthermore, A. would regularly wake up during the night when preictal or early ictal phenomena arose; he would then react with the application of previously practiced countermeasures.

Literature indicates that evidence for the enhancement of psychological well-being by psychobehavioral therapy is more established, while reliable evidence on its role on seizure control is scarce [3]. The A/R intervention may represent the most comprehensively developed cognitive-behavioral approach to epilepsy [5] that has repeatedly been correlated with a reduction of seizure frequency in individuals with complex partial seizure disorders in uncontrolled prospective and retrospective studies [6–8]. However, our ability to draw conclusions from the presented data has methodological limitations. The possibility of false negative self-reports of seizure occurrence cannot be ruled out but seems unlikely because the patient and his parents have been very conscientious in keeping a seizure diary for a long time. Because of the uncontrolled nature of a case report, nonspecific effects of attention and natural fluctuations of seizure frequency that could have contributed to improve seizure frequency cannot be factored into the interpretation of the presented data. However, the long and stable

seizure frequency prior to the intervention makes natural fluctuations unlikely. Furthermore, the decreased seizure frequency has remained stable during follow-up and post follow-up with decreased and no contact with the A/R counselor which makes unspecific effects of attention implausible.

## 6. Conclusion

In this case of a 16-year-old male, the acquisition of self-organizational skills and the development of seizure interruption techniques correlated with a clinically significant drop of seizures and an increased sense of “being in control” of his seizures. The case exemplifies that motivational strategies may be applied to facilitate the regulation of lifestyle-related seizure precipitants. Future prospective studies are needed to further investigate the psychological mediators of an individual's increasing sense of seizure self-control and its actual relationship with seizure frequency.

## Acknowledgments

This publication was made possible with a grant from the Christophorus Foundation and the Integrated Curriculum of Anthroposophical Medicine (ICURAM) of Witten/Herdecke University (UWH). The authors would like to thank Andrea Flores and Samson Kirschning for their assistance with electronic artwork.

## Disclosure

None of the authors have any conflict of interest to disclose.

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