

Cognitive behavioral therapy (CBT) in a Patient with Implantable Cardioverter Defibrillator (ICD) and Posttraumatic stress disorder(PTSD)

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The implantable cardioverter defibrillator (ICD) has currently become the standard treatment for preventing sudden cardiac death. There are some psychological consequences in patients with ICD such as posttraumatic stress disorder (PTSD) after the shocks induced by ICD. This report aimed to present the case of a 54-year-old man with ICD who had developed PTSD; his PTSD was treated, using cognitive-behavioral psychotherapy consisting of relaxation, mindfulness and problem solving techniques. In patients with ICD who are experiencing PTSD using cognitive behavioral interventions may be helpful to reduce their psychological sufferings.

Key words: *Implantable cardiovertter defibrillator(ICD), Cognitive behavioral psychotherapy(CBT).*

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The implantable cardioverter defibrillator monitors cardiac ventricular arrhythmias and treats such arrhythmias with anti tachycardia pacing (ATP) or high-energy shock (1). ICD has currently become the standard treatment for preventing sudden cardiac death (2). Despite obvious reduction in overall mortality, patients with ICD have difficulty facing life-threatening arrhythmias and ICD therapy (1). Fear of recurrent arrhythmias, fear of death, fear of correct functioning of the device and losing control during shock are among the common problems of such patients (3). Increased levels of psychological problems in such patients have been reported in some studies (1); the level of anxiety and depression in different studies has been reported to be in the range of 24-87% to 24-33%, respectively (1). The increased level of anxiety and depression calls for the need to ICD function and therapy (4-6).

Known disorders in ICD patients include panic, depression and anxiety. Implantation of ICD is associated with recalling the horrific events of coronary heart disease (7), survival after life-threatening events in such patients, possible occurrence of acute stress disorder or formation of a series of posttraumatic stress disorder symptoms (8-10). In addition to facing a life-threatening event (Criterion A of posttraumatic stress disorder diagnosis), the diagnosis of PTSD, according to the international criteria, requires the patient's response associated with severe panic and painful recalling of the event, avoidance and hyper vigilant behaviors (11-12). Evidences have recently shown that the

prevalence of PTSD in patients of an ICD clinic was approximately 20% and it was also found that PTSD could increase mortality rate in these patients (15,16). This report aimed to explain a case of posttraumatic stress disorder in a patient with ICD. Therefore, cognitive-behavioral psychotherapy treatment was applied for this patient in a clinical situation considering the presence of PTSD and its symptoms. Despite the high prevalence of psychological problems in ICD patients and its effects on cardiac function, identification of posttraumatic stress disorder and its psychotherapy may lead to better compatibility of patients and reduction, or prevention of shock-requiring arrhythmias caused by emotional stimuli.

Case Report

The patient was a 54-year-old retired pilot. He was hospitalized in CCU in 1999 due to ischemic heart disease and cardiomyopathy, and ICD was implanted for him in 2001 following CABG surgery; the device was replaced in 2009. After dealing with his son's death, in a week, he developed ventricular tachycardia due to heart disease and was shocked by ICD and his ventricular tachycardia was controlled. Afterwards, for one month, the patient was constantly afraid of recurrent shock and sometimes escaped due to fear and was sometimes afraid of going to toilet alone and avoided thoughts, he also avoided the places that reminded him of that problem. He occasionally behaved as if he was shocked and took refuge to book reading and watching TV to avoid recalling the thoughts and experiences. During the next three

months, his anger was greater than ever before and he got angry with the smallest stimulus. He had become touchy. Because of ICD and low EF, he was at home most of the time and his concentration was declined as the slightest noise distracted and distressed him. He even reacted to the sound of a door being closed. Sleeping under the influence of medicine was good, but it took some time for him to fall asleep. His excitation and discomfort threshold was reduced without medication and he became very sensitive.

During this time, the patient mood was euthymic. However, due to having anxiety, he had sometimes thoughts of death, but he had no suicidal thoughts and was worried about being separated from his family and relatives. He still loved his wife and children and was not totally heartbroken. Using the Persian version of SCID-I tool (13), in addition to criterion A, it was found that the patient had three items of re-experiencing symptoms, three items of avoidance symptoms, and two items of hyper-arousal symptoms. Now, three years after that shock, he has been experiencing such symptoms until his first visit. The patient had no history of diabetes mellitus and hyperlipidemia and faced hypothyroidism in taking Amiodarone which was corrected by replacement therapy. His current medications include Mexitil 200 mg twice daily, Amiodarone 200 mg twice daily, Levothyroxine 50 mg once daily, digoxin once tab daily, Atorvastatin 20 mg once daily and Spironolactone 20 mg once daily. The history of psychiatric disorders for the patient and his family was negative. Since six months ago, the patient has been receiving treatment with 100 mg sertraline tablets daily plus 0.5 mg alprazolam daily. His medications were not changed during the treatment and they partially reduced his symptoms. Considering the diagnosis of posttraumatic stress disorder, in combination with pharmacotherapy, the patient was treated by cognitive-behavioral psychotherapy. First, the misconceptions of the patient about anxiety and heart disease were evaluated and the manner of holding psychotherapy sessions was described to him. Afterwards, relaxation, mindfulness and problem solving techniques to discuss the patient's problems were dealt with in eight sessions. To assess patient's level of anxiety and depression before and after the intervention, the Persian version of the hospital anxiety and depression scale (HADS) was used (14). After the CBT intervention, the re-experiencing and avoidance behaviors were markedly decreased and hyper vigilant symptoms were controlled. The remission remained six months after the treatment. The score of the depression and anxiety in HADS scale was significantly lower in the follow up till one month after the last session (the eighth session). Other than psychological remediation, the patient's adherence to medical treatment such as taking medication was improved.

Discussion

Similar to the studies of Hamner, the report of this case indicated that implantation of ICD, although, can reduce mortalities from serious cardiovascular diseases, because of previous encounter of the patient with heart-threatening events and the effect of ICD in recalling of such events and facing cardiogenic shock, it can itself impact the patient's quality of life and increase the level of anxiety and possibility of anxiety disorders such as posttraumatic stress disorder (7,15). Cardiologists seek to increase patient longevity with ICD implantation in order for patients to have an active life. However, the occurrence of anxiety and posttraumatic stress disorder symptoms can make individuals more vulnerable to cardiac arrhythmias through recalling of distressing memories and hyper-motivation by stimulating the autonomic nervous system (1) which is contrary to the very first demand of the physicians. On the other hand, the person escapes from many situations by avoidant behaviors, and due to the fear of heart attack or possible shocks, they may lose their function and accordingly their activities will be limited. Therefore, paying attention to such symptoms and timely diagnosis and treatment may help improve cardiac function of these patients (16).

In line with Frizzle's study, the experience of this PTSD case treatment following the implantation of ICD indicated that the cognitive-behavioral treatments can reduce the symptoms of this disorder (17), but in this case report we implicated mindfulness which may reduce the time of psychotherapy. However, the experience of a case treatment cannot be generalized to all cases, and it is appropriate to carry out random clinical trials with a large sample size with the presence of a control group in order to more accurately determine the impact of this treatment on PTSD disorder in ICD patients.

The effect of cognitive-behavioral intervention in this case suggested that not only the symptoms of posttraumatic stress disorders in these patients are reduced, but also the anxiety and depression level of such patients are decreased. As Kohen showed, this effect may be due to better patient compatibility with the conditions caused by cardiac disease and the use of ICD (18). This case showed that cognitive behavioral interventions can improve the adherence of medical treatments such as psychological symptoms, which was one of the therapeutic outcomes in this report. In this case, the impact of cognitive-behavioral interventions can be examined in the future studies to improve the compatibility and enhancement of the mental health of such patients regardless of posttraumatic stress disorder. However, the existence of pharmacotherapy was a confounding factor which influenced psychotherapeutic treatment.

In addition to the simultaneous treatment of psychiatric disorders in ICD patients, it can be asked that how these disorders may be prevented. Finding answers to this question may be very helpful in patients'

satisfaction about the treatment and reduction of cardiac and arrhythmias events as well as ICD shock. Given that the report of this case indicated that cognitive-behavioral interventions reduce the level of anxiety, depression and symptoms of posttraumatic stress disorder, conducting studies to evaluate early interventions before the occurrence of anxiety symptoms and using more sensitive tools like Hamilton Anxiety Scale or Spilberger anxiety scale may be helpful for the patients. For the future studies, it is recommended to provide the patients with appropriate trainings and cognitive-behavioral interventions along with the implantation of ICD to improve the compatibility of the patients with cardiac disease and ICD and prevent behavioral and anxiety disorders impairing the health of the heart and the quality of life of the patients.

Conclusion

Considering the occurrence of posttraumatic stress disorder in ICD patients, physicians should pay attention to the symptoms of this disorder as well as the symptoms of anxiety and depression and conduct treatments involving cognitive-behavioral interventions to help improve cardiovascular as well as psychological health of the patients. However, the findings of this case are needed to be evaluated in clinical trials as well.

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